Strait of Georgia Recreational Fishery Statistics for Salmon and Groundfish, 2009

P.R. Zetterberg, N.M. Watson, and D.S. O'Brien

Fisheries and Oceans Canada
Science Branch, Pacific Region
Stock Assessment Division
3225 Stephenson Point Road
Nanaimo, British Columbia
V9T 1K3

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by

P.R. Zetterberg, N.M. Watson, and D.S. O'Brien

Fisheries and Oceans Canada
Science Branch, Pacific Region
Stock Assessment Division
3225 Stephenson Point Road
Nanaimo, British Columbia
V9T 1K3

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ABSTRACT

Zetterberg, P.R., Watson, N.M., and O'Brien, D.S. 2012. Strait of Georgia recreational fishery statistics for salmon and groundfish, 2009. Can. Manuscr. Rep. Fish. Aquat. Sci. 2979: xii + 104 p.

Recreational fisheries in the Strait of Georgia have been monitored since the 1960's and the subject of an intensive creel survey since 1980. Annual reports of the results of this monitoring program are produced. This report documents recreational catch and effort estimates from the Strait of Georgia creel survey in 2009 and compares these to data from 2004 to 2008 to determine recent trends in catch and effort.

The 2009 Strait of Georgia creel survey estimates were derived from 7,114 fishing interviews and 87 aerial surveys. In addition to the creel survey, data were also collected through a recreational fishery logbook program and the resulting data are also presented in this report. The logbook data are treated as a census of catch obtained during logged trips, and are analysed with creel data to ensure that logged trips are not double counted in the creel survey estimates.

For the entire survey year (January through December) anglers conducted an estimated 116,215 boat trips and kept 43,137 chinook, 8,623 coho, 197 sockeye, 80,272 pink, 160 chum salmon, as well as 5,295 halibut, 3,770 lingcod, and 10,170 rockfish. The Comparative (May to September) effort increased by 38.2% from 77,028 boat trips in 2008 to 106,435 in 2009 and was 12.0% above the five-year average of 95,015 trips. Total salmon retained catch increased by 477.6% from 21,855 in 2008 to 126,233 in 2009 mainly due to an abundance of odd year Fraser River pinks. Salmon retention in 2009 was 70.5% higher than the 2004-2008 average of 74,049. Based on these estimates, the comparative kept catch per boat trip (CPUE) for all salmon in 2009 was 1.19.

A total of 2,223 chinook and 488 coho salmon were examined for adipose fin clips by creel survey staff. Of these, 36.9% of chinook and 75.0% of coho had adipose fin clips. Scale samples were also collected from retained chinook and the results consisted of 10.4% age 2 fish, 28.2% age 3 fish, 48.0% age 4, and 13.3% age 5 with no age 6 fish.

RÉSUMÉ

Zetterberg, P.R., Watson, N.M., and O'Brien, D.S. 2012. Strait of Georgia recreational fishery statistics for salmon and groundfish, 2009. Can. Manuscr. Rep. Fish. Aquat. Sci. 2979: xii + 104 p.

La pêche récréative dans le détroit de Georgie est surveillée depuis les années 1960 et fait l'objet d'une méthode d'enquête intensive par interrogation des pêcheurs depuis 1980. On prépare des rapports annuels des résultats de ce programme de surveillance. Dans ce rapport, on consigne les estimations des captures et de l'effort de la pêche récréative tirées de l'enquête par interrogation des pêcheurs portant sur le détroit de Georgie qui a été réalisée en 2009, et on compare ces données à celles obtenues de 2004 à 2008 afin de relever les tendances récentes sur le plan des captures et de l'effort.

Les estimations de l'enquête par interrogation des pêcheurs portant sur le détroit de Georgie réalisée en 2009 sont tirées des 7 114 entrevues de pêcheurs et de 87 relevés aériens. En plus de cette enquête, des données ont a également été recueillies dans le cadre d'un programme consistant à tenir un journal de bord de la pêche récréative, lesquelles sont également présentées dans ce rapport. On traite les données tirées de ce journal comme un recensement du nombre de captures relevées pendant les sorties consignées et on compare ces données à celles de l'enquête afin de s'assurer que les sorties ne sont pas comptées en double dans les estimations de l'enquête par interrogation des pêcheurs.

Pour la totalité de l'année visée par l'enquête, soit de janvier à décembre, les pêcheurs ont réalisé environ 116 215 sorties, et ont conservé 43 137 saumons quinnat, 8 623 saumons coho, 197 saumons rouges, 80 272 saumons roses, 160 saumons kéta, ainsi que 5 295 flétans, 3 770 morues-lingues et 10 170 sébastes. L'effort comparatif (de mai à septembre) a affiché une hausse de 38,2 % pour passer de 77 028 sorties en 2008 à 106 435 en 2009, et était de 12 % supérieur à la moyenne quinquennale, qui était de 95 015 sorties. Le nombre total de saumons non rejetés a augmenté de 477,6 % pour passer de 21 855 en 2008 à 126 233 en 2009, une hausse en grande partie attribuable à l'abondance de saumons roses dans le fleuve Fraser puisqu'il s'agissait d'une année impaire. Le nombre de saumons non rejetés en 2009 a été 70,5 % supérieur à la moyenne dégagée de 2004 à 2008, qui était de 74 049. À la lumière de ces estimations, le nombre comparatif de saumons non rejetés par sortie (captures par unité d'effort), pour l'ensemble des saumons en 2009, a été de 1,19.

Au total, le personnel responsable de l'enquête par interrogation des pêcheurs a examiné 2 223 saumons quinnat et 488 saumons coho à la recherche de coupures de la nageoire adipeuse. De ce nombre, 36,9 % des saumons quinnat et 75 % des saumons coho présentaient ce genre de coupures. On a également prélevé des échantillons d'écailles sur les saumons quinnat. Les résultats sont les suivants : 10,4 % étaient des poissons de 2 ans, 28,2 % des poissons de 3 ans, 48 % des poissons de 4 ans, 13,3 % des poissons de 5 ans. Aucun des poissons non rejetés n'avait 6 ans.

INTRODUCTION

This report documents 2009 catch and effort statistics with comparisons to the 2004 to 2008 survey results for the Strait of Georgia (SG) tidal recreational fishery creel survey and presents the methodology for collecting these data. Data are presented in tables and figures with catch and effort dating back to 1984. Catch and effort tables are displayed by month, creel area and species. For comparison purposes and unless otherwise specified, the annual data presented are from the period May through September only.

In addition to creel survey data, in 2009 we included log data from the voluntary logbook program. Logbooks were distributed for completion by selected fishers and log data have been included in this year's report providing a more complete picture of the recreational fishery.

The 2009 report is one of a series documenting the activities of the creel survey and providing official SG tidal recreational fishery catch statistics. All official recreational fishery catch estimates are now also stored in a database maintained by Fisheries & Oceans Canada (DFO) South Coast regional staff. Please contact the lead author for more details. A list of previous reports in this series may be found in Appendix A.

BACKGROUND

Historically, the SG fishery supported what was one of the most valuable recreational fisheries in British Columbia. The 2009 coded-wire tag (CWT) recoveries indicated catches consisted primarily of Puget Sound, East Coast Vancouver Island, and Fraser River salmon stocks. In 2009, fewer than 2 million sockeye returned to the Fraser River. An assessment of approximately 60 years of escapement and catch data for all Pacific five salmon species from the north and central coasts indicate that pink salmon are doing relatively well but coho and chinook are doing relatively poorly (DFO 2011). Salmon survivals appear to be strongly influenced by conditions in their early marine life and ocean survival and growth tends to be best when La Niña conditions and cool ocean waters are present in the first months that juveniles enter the ocean (DFO 2011). Various First Nation, commercial, and recreational groups on both sides of the Canada/U.S. border depend on these stocks.

The SG creel survey study area comprises over 5,900 km^2 of ocean and has in excess of 2,400 km of shoreline. From its southern end near Victoria, the strait extends about 290 km northwest past Campbell River and at its greatest width is about 32 km wide. Two major population centres, Vancouver and Victoria, and many smaller centres such as Nanaimo and Campbell River are located within the study area. Over 500 boat launch ramps, marinas and public wharves as well as thousands of private boat launching facilities provide ocean access (Figure 1).

Creel surveys in Juan de Fuca Strait (JDF) are administered by different staff within the South Coast Regional office: DFO Strait of Georgia Stock Assessment Group (to Sheringham Pt.) and DFO West Coast Vancouver Island Group (Sheringham Pt. west). Creel area 20(SG) refers to the area east of Sheringham Pt. to Albert Head. Similarly, the Johnstone Strait area which is comprised of creel areas 11, 12, and 13 are surveyed by two groups within South Coast Regional office; DFO Strait of Georgia Group and DFO Northern Vancouver Island Group. The SG group provides estimates for area 13 only.

The recreational fishery is active throughout the year but over 85% of the effort occurs in the summer months of May to September (Collicutt and Shardlow 1993). The most sought after species in the SG recreational fishery are chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) salmon, but in recent years significant fisheries directed at pink (*O. gorbuscha*), sockeye (*O. nerka*), rockfish (*Sebastes* spp.) and particularly halibut (*Hippoglossus stenolepis*) have developed in certain areas.

The recreational fishery remains the primary harvester of chinook and coho in the SG. Effort in this fishery has fluctuated from 189,150 boat trips in 1960 to peaks of 562,113 in 1984 and 561,495 in 1988. The all time low of 77,028 boat trips was seen in 2008.

Creel survey data are used for a variety of management and reporting purposes within DFO. In addition, creel survey information is used to predict the effects of regulation changes and to measure success of management actions. The adipose clip information collected during the survey is provided to the Mark Recovery Program and it is used in combination with other data for exploitation rate, marine survival and stock distribution analyses (Kuhn *et al.* 1988).

OBJECTIVES

The specific objectives of the 2009 Strait of Georgia tidal creel survey were:

1. To estimate the recreational angler effort, catch rate (both releases and retention) of chinook, coho, chum (*O. keta*), pink, and sockeye salmon, halibut, lingcod (*Ophiodon elongatus*), rockfish and other finfish by month for creel area 13 through 20(SG), 28, and 29.

2. To estimate the catch rate of adipose-clipped chinook and coho in the recreational fishery.

3. To estimate the age composition and mean length-at-age for chinook, and length frequency for chinook and coho retained in the recreational fishery.

METHODS

STUDY DESIGN

The design of the SG tidal creel survey conducted in 2009 was similar to that used in the survey since it's inception (DPA Consulting Ltd.1982) with modifications to data analyses, sampling intensity, flight routes and data processing. It is comprised of two independent surveys: angler interviews and aerial surveys. Angler interviews provide data on recreational fishing catch per unit effort (CPUE) and daily activity patterns. Aerial surveys provide estimates of total recreational fishing effort in the study area at the time of the aerial survey. These data are combined to provide monthly estimates of total recreational fishing effort and total catch of salmon, groundfish and other finfish in the recreational fishery using the analytical methods described by English *et al.* (2002).

The fishery was stratified according to the following criteria:

1. Month. The survey operated from 01 May to 30 September for the entire SG. Creel areas 19 and 20(SG) were surveyed for all months in 2009.

2. Geographic area. Catch and effort estimates were produced at the creel sub-area level and summarized by creel area. These creel sub areas are defined by Shardlow (1985) and plotted in Figures 3a and 3b. In reports prior to 2006, these were simply called 'Statistical Areas' which was changed to Pacific Fishery Management Areas (PFMA) starting with the 2002-2006 data report, Zetterberg *et al.* (2009). PFMA boundaries are legally defined and differ from the creel areas. In this report we have used creel area to ensure that there is no ambiguity as to the spatial stratification used.

3. Day type. Weekend and mid-week days were considered independently because recreational fishing effort is known to differ strongly between these day-types. Statutory Holidays were treated as weekend day-type.

4. Time of day. Sampling shifts were conducted during set time periods. A sampling shift is defined as a consecutive time period of interviewing anglers by one creel surveyor. The timing of sampling shifts varied during the year to account for varying fishing effort due to changes in sunrise and sunset timing. From April to August sampling shifts occurred during one of three time periods within a day: early (0800 to 1400 hours), mid-day (1200 to 1800 hours) or late (1500 to 2100 hours). The timing of early and late shifts changed in both September and October (September: early 0900 to 1500 hours; late 1400 to 2000 hours – October: early 1000 to 1600 hours; late 1300 to 1900 hours). Due to shorter daylight hours during winter, only single sampling shifts occurred in January (1000 to 1600), February (1100 to 1700), March (1200 to 1800), November (1100 to 1700 hours), and December (1000 to 1600).

Specific landing sites were chosen as locations for sampling shifts. Site selection was based on four criteria: representativeness, traffic volume, site accessibility and adequate observation points. Discussions with local fishers, marina operators, Fishery Officers, and long term creel survey staff, along with data from previous surveys were used to choose sites that were representative of local recreational fishing activity. Sites with expected traffic volumes of more than 15 boats per day in the summer were considered as possible sampling locations. Expected traffic volumes for sites were compiled from previous surveys or from discussions with marina operators or local Fishery Officers. Site accessibility refers to whether an interviewer can easily reach a site by car during the defined shift hours. Only sites with good accessibility were selected. As a result, landing sites on any of the islands in the SG were excluded from the survey. The final criterion, adequate observation points, was essential for interviewers to obtain an accurate count of all boats returning to a landing site.

Selected access sites were grouped into one of five survey zones (Victoria, Cowichan – Nanaimo, Campbell River, Sunshine Coast and Vancouver). These zones delineated areas within which local survey staff were hired. To reduce travel costs, survey staff conduct shifts only at sites within their survey zone.

Within each month and survey zone, each site was randomly allocated between four and 15 sampling shifts. These sampling shifts were divided equally among weekend and mid-week days and early, mid, and late daily time periods. The higher sampling effort on weekend days allows for a higher proportion of angling trips to be sampled (interviewed).

In 2009, interviews were conducted at 33 designated landing sites (boat ramps, marinas, or resorts; Figure 1) representative of the recreational fishing activity in the survey area at a particular time. The survey effort at specific access sites was optimized prior to the 2009 season based on an analysis by O'Brien and Carter (2009).

In 2009 marine recreational logbooks were distributed for completion by selected anglers. The purpose of these volunteer logbooks was to focus in areas with less accessible landing sites where creel data are more difficult to acquire. Fishers frequenting these areas were generally agreeable to be part of the program.

DFO coordinated data collection, data entry, and conducted estimation of catch and effort statistics. Catch and effort estimates are generated by creel sub-area but data are summarized and reported at the creel area level.

DATA COLLECTION

Angler interviews

Surveyors were stationed at boat ramps or marinas for sampling shifts to interview anglers as they returned from fishing. The numbers of boats returning to a site during a sampling shift as well as number of interviews attempted and completed were recorded on a tally sheet. For each boating party landing after recreational fishing, the following information was recorded on the interview form (Figure 2):

1. Total number of licensed anglers in the boat.
2. Time of landing.
3. Whether the trip included services of an angling guide.
4. Time of departure and length of trip.
5. Total time during which fishing lines were in the water.
6. Average number of fishing lines or traps in the water.
7. Catch Summary: -Species and total number of kept and released fish for each creel sub-area fished (data sheets include the possibility of three sub-areas being fished during a single trip).
   -Number of hours spent fishing, type of fishing conducted (gear) and primary fishing location in each creel sub-area.
8. Adipose fin-clip status for chinook and coho.
9. Number of hours directed at each species.
10. Seal or sea lion encounter information.

Interviewers who are trained in fish identification inspected retained catch of each boating party willing to participate in the survey. Landed chinook and coho were checked for a missing adipose fin, which indicates that fish may be of hatchery origin and possibly the presence of a CWT (Kuhn *et al.* 1988). The interviewer informed anglers about the head recovery program and submission of heads when retaining an adipose clipped chinook or coho. In addition, scale samples for age determination and measurements of fork length were taken, when possible, where chinook and coho were inspected. Chinook were also sampled for DNA.

Groundfish species were also biologically sampled. Retained lingcod (*Ophiodon elongates*) were measured (fork length), sex was determined and a portion of the dorsal fin was removed and placed in a labelled envelope for use in age determination (McFarlane and King, 2001; MacLellan, 2004). Other species including rockfish and halibut were identified to species and measured (fork length).

In 2009, SG creel surveyors continued electronically entering their data into the Catch and Release Estimation Survey Tool (CREST) system, a South Coast database and analysis tool for recreational data. This electronic entry system has been operational since 2008 and greatly facilitates rapid estimate generation. DFO provided laptop computers to each surveyor to facilitate field data entry.

Logbooks

In 2009, logbooks were distributed by DFO in Campbell River, Nanaimo, Victoria/Sooke, and the lower Sunshine Coast. Logbooks were returned to DFO at the end of the fishing season and data were entered into CREST and verified.

Effort counts

Effort, as individual boats actively fishing, is counted via aerial surveys of the study area. The study area is divided into approximately equal northern and southern sections for purposes of aerial effort counts (Figure 3a and b). Seaplane charter companies in Victoria and Courtenay (Pat Bay Air and Island Air, respectively) provided aircraft for this purpose. Aerial surveys travelled along the pre-defined routes and a single on-board observer counted all boats actively engaged in recreational fishing activity, using standard methods (Nagtegaal *et al.* 2009).

Flight paths and times of departure were designed to cover major concentrations of recreational fishing activity at peak periods and the number of aerial surveys each month was governed by budget. There were between six and ten flights per month depending on the time of year, with the highest number of flights occurring during the peak periods of June to September. Planes flew at an altitude of 150-300 m (500-1000 feet) to facilitate a broad range of vision and still allow easy identification of vessel type. Aerial surveys conducted between May and September range between 3 to 4.5 hours covering a flight path of 600 to 670 km at speeds of 145 to 220 kph. During the January to April and October to December periods in creel areas 19 and 20(SG), flights were 1.5 hours covering a 200 km route (Figure 3c). Days for aerial surveys during a month were randomly selected for each day type (weekday and weekend). Flight paths are reviewed annually and adjustments are made based on interview results indicating fishing activity outside of the current path.

DATA ANALYSIS

Data analysis of results from the tidal creel survey program in 2009 included calculation of catch and effort statistics, calculation of variance of total fishing effort and catch, estimation of marked (CWT) chinook and coho salmon, and estimation of age and length composition of retained chinook. Established analysis methods are detailed by English *et al.* (2002). The estimates in this report are a summary of those maintained in the CREST database.

Along with data from the 2009 creel survey program, recreational log information from guided and un-guided participants within the SG area were also collected. Logbook data are entered into CREST, and logged catch for areas and times consistent with the 2009 SG creel survey program are presented here. The logbook data are treated as a census of catch obtained during logged trips, and are analysed with creel data to ensure that logged trips are not double counted in the overall catch estimates.

RESULTS AND DISCUSSION

DISTRIBUTION OF SAMPLING EFFORT

A total of 7,114 interviews with finfishing anglers at 33 landing sites, and 87 aerial surveys were conducted in 2009 (Table 1). Monthly distribution of interviews generally reflected monthly distribution of fishing effort (number of boat trips; Figure 4). While the survey goal is to attain interviews from 10% of fishing effort, total interviews in 2009 represent 6.1% of estimated total fishing effort for the entire study area (116,215 full year boat trips; Table 5). Interviews involving actively fishing anglers ranged in each creel area from a low of 1.8% in creel area 15 to a high of 36.0% in creel area 20(SG) (Table 1) of the total estimated effort occurring during the survey.

All 2009 SG recreational catch and effort statistics are summarised for key species by month and creel area. Fishing effort and catch statistics by key species are presented for each combination of month and creel area (Appendices C-1 to C-4, and C-9 to C-19).

Anglers made 106,435 boat trips during 2009 (May to September); this is a 38.2% increase in effort from 77,028 trips completed in 2008 and 12.0% above the five-year average of 95,015 trips (Table 3). Angler effort has shown a decline over the previous five years from a high of 114,262 boat trips in 2004 to a low of 77,028 in 2008 (Figure 5; Appendix F). Fishing effort followed the same general seasonal pattern as seen in previous years where effort levels climbed steadily from April, peaked in August and declined in September and October (Figure 6). During the May to September period, creel areas 20(SG) (35.2%), 13 (18.2%), 17 (10.5%), and 19 (10.2%) showed the highest effort expended.

Fourty-two logbooks were distributed to 31 fishers in the Campbell River, Nanaimo, Victoria, and the lower Sunshine Coast areas and 39 (92.9%) of these were returned. Table 2 lists the number of logged boat trips received by DFO in 2009.

RECREATIONAL CATCH

Finfish retained in the SG recreational fishery for the May to September period in 2009 were estimated at 161,625 pieces and consisted of 78.1% (126,233) salmon (Table 5 and 6), 15.7% (25,320) groundfish, and 6.2% (10,072) rockfish (Table 11 and 13). Anglers also released an estimated 225,538 finfish pieces which consisted of 65.1% (146,928) salmon (Table 7 and 8), 23.3% (52,474) groundfish, and 11.6% (26,136) rockfish (Table 12 and 14) for this same period. There were also 214 pieces released that were classified as ‘other’ in general. Comparisons of CPUE between salmon and groundfish are summarized by month and creel area in Appendices D-3 and D-7 for the creel survey and Appendices D-4 and D-8 for log data.

Chinook, pink, and chum salmon retention was open all year in the SG survey area in 2009. Due to early timed Fraser River chinook concerns, restrictions were initiated in early March until early June in the southern portion of the SG survey area. Coho retention was allowed from June to the end of December with two (2) hatchery fish per day being the most common retention regulation. Retention of sockeye in the SG survey area was not allowed in 2009. Most groundfish species were open all year in the SG survey area in 2009. Halibut retention was open from March to the end of December. Lingcod and rockfish were open concurrently from April to the end of December. For further details on the regulations which affected the 2009 SG recreational fishery (for major finfish species) see Appendix G.

Salmon

Recreational salmon retention for the SG in 2009 totalled 126,233 pieces for May to September (Table 4) and 132,451 when including creel areas 19 and 20(SG) for the entire year (Tables 5 and 6). For the May to September period, retained catch consisted of 29.7% chinook, 6.5% coho, 0.1% sockeye, 63.5% pink, 0.1% chum, and 0.1% unidentified salmon. Salmon retention in 2009 was 70.5% higher than the 2004-2008 average of 74,049. Comparative salmon released and total salmon intercepted for 2009 is listed in Table 4.

In 2009, the highest effort expended was observed in creel areas 20(SG) (36.0%), 13 (16.7%), and 19 (14.0%) with a total salmon kept CPUE of 1.92, 1.78, and 0.34, respectively (Figure 15, Appendix D-7). The CPUE for all salmon kept by creel area for log data are presented in Appendix D-8. The highest fishing effort was seen during the May to September period in 2009 with the highest total salmon kept CPUE of 2.28 observed during August (Appendix D-3). During the shoulder period, December showed a relatively high kept CPUE of 1.17. CPUE in 2009 for salmon in general is listed by month in Appendices D-3 for the creel survey, D-4 for log data, and by creel area in D-7 for the creel survey and D-8 for log data.

Chinook

In 2009, chinook salmon retention was 37,460 pieces (five-year average = 27,369) during the May to September period (Table 3, Figure 5). Within the previous five years, retention ranged from 17,936 in 2008 to 36,207 in 2004. Monthly chinook retained increased steadily through May and June and peaked in August at 13,873 pieces (Table 5, Figure 7). For the entire survey period, creel area 20(SG) recorded 53.0% of the total estimated catch, followed by creel area 13 (20.0%), and 17 (9.3%) (Table 6, Figure 9, Appendix C-2).

Retained legal and sub-legal chinook is summarized in Table 9 by month and Table 10 by creel area for 2009. Appendix F summarizes the number of retained chinook annually from 1960 to 1984.

Chinook salmon releases for 2009 were 54,203 pieces (five-year average = 17,387) during the May to September period (Table 3, Figure 5). Monthly chinook released followed the same general pattern as those retained (Table 5, Figure 7). Released legal and sub-legal chinook is summarized in Table 9 by month and Table 10 by creel area for 2009. Table 3 summarizes the number of released chinook annually from 2009 back to 1985.

Seasonal (May to September) average CPUE (kept catch per boat trip) for chinook in the creel survey has remained fairly constant over the past several years. In 2009, CPUE reflected the general trend of higher retained catches with an average of 0.34 compared to the 2004 to 2008 average CPUE of 0.29 (Figure 8, Appendix D-1). For the entire survey period, creel area 20(SG) recorded the highest CPUE at 0.55 followed by creel areas 13 (0.44), 17 (0.36), and 14 (0.31) (Appendix D-5). CPUE from logged chinook salmon are listed in Appendices D-2 (by month) and D-6 (by creel area).

Chinook retention improved in the early 2000's but declined from 2003 to 2005. Retention increased slightly from 2006 to 2007 and saw its lowest level in 2008 since 1960 (Table 3 and Appendix F respectively). Chinook CPUE improved in 2009 relative to 2008 (0.34/boat trip vs 0.23/boat trip, respectively) likely resulting in the observed 38.2% increase in effort in 2009 relative to 2008. Chinook retention increased by 108.9% from 17,936 in 2008 to 37,460 in 2009. Spatial distribution of chinook retained in 2009 followed a similar pattern to previous years with highest catches being in southern SG.

Coho

Coho salmon retention in 2009 (May to September period) was 8,182 pieces (five-year average = 4,523) which was 674.8% higher than 2008 (1,056; Table 3, Figure 10 and 11). Retained catch peaked in August at 3,429 pieces (Table 5). For the entire survey period, creel area 20(SG) recorded 76.1% of the total estimated catch, followed by creel area 13 (16.4%), and 28 (3.6%; Table 6, Figure 9).

Coho salmon releases for 2009 were 34,516 pieces (five-year average = 17,283) during the May to September period (Table 3, Fig 5). Table 3 summarizes the number of released coho annually from 1998 to 2009.

In 2009, coho CPUE averaged 0.07 for the May to September period (five-year average = 0.04; Appendix D-1, Figure 11). For the entire survey period, Creel area 20(SG) recorded the highest CPUE at 0.16 followed by creel areas 13 (0.07), and 28 (0.06; Appendix D-5). CPUE from log data for coho salmon are listed in Appendices D-2 by month and D-6 by creel area.

Coho retention in 2009 increased considerably and was at levels not seen since 2004 (Table 3). Coho retention has fluctuated widely, even within the 2000's. From a comparative high of 947,481 pieces in 1988 it continued to decline over time. The 1999 estimate of coho retained was an all time low of 310 pieces due to a majority of areas being closed to their retention. Coho catch numbers began to improve in the early 2000's as stocks showed some recovery as well as the advent of mark selective (adipose-clipped only) fisheries in selected areas on hatchery stocks. Since 2005, retained catch dropped again as restrictions on coho were reintroduced. Appendix F summarizes retention of coho from 1960 to 2009.

Sockeye, pink, and chum

Although there was no recreational fishery for sockeye in the SG in 2009, there were 197 pieces retained (five-year average = 8,072) (Table 3, 5 and 6). For the entire survey period, creel area 20(SG) recorded 100.0% of the total estimated catch of sockeye (Table 6). Retained catch peaked in July with 102 pieces (Table 5).

Estimated sockeye releases during 2009 were 2,220 pieces (five-year average = 1,691) for the May to September period. Releases are listed by month and by creel area in Tables 7 and 8 respectively. Estimates by month and creel area are listed in Appendices C-9 and C-10. A comparison of retained sockeye in 2009 is displayed with the five year average in Figure 12.

Pink salmon retention was 80,194 pieces (five-year odd cycle average = 78,929) for the May to September period in 2009 (Table 3). A comparison between the 2009 and the five-year average of odd-year pink are presented in Figure 13. Retained catch peaked in August with 57,165 pieces (Table 5). For the entire survey period, creel area 20(SG) recorded 63.2% of the total estimated catch of pink salmon followed by creel area 13 (30.2%), and 19 (3.3%) (Table 6).

Estimated pink salmon releases for 2009 were 25,305 pieces for the May to September period (four-year odd cycle average = 28,892) (Table 3). Pink releases followed the same general pattern as retained in regards to creel areas. Releases are presented in Table 7 by month and Table 8 by creel area.

Chum salmon retention was 137 pieces (five-year average = 3,345) during the May to September period (Tables 3 and 5). Retained catch peaked during September at 98 pieces and 52.5% were taken in creel area 20(SG) and 41.9% in creel area 13 (Tables 5 and 6). A comparison of retained chum in 2009 is displayed with the five year average in Figure 14.

Estimated chum salmon releases for 2009 was eight pieces for the May to September period (five-year cycle average = 363) (Table 3). Releases are presented in Table 7 by month and Table 8 by creel area.

CPUE for sockeye, pink, and chum is listed in Appendix D-1 by month for the creel survey, D-2 for log data, and by creel area in D-5 for the creel survey and D-6 for log data.

Groundfish

Recreational groundfish retention for the SG in 2009 totalled 35,392 pieces for May to September (21.9% of overall catch) and 37,789 when including creel areas 19 and 20(SG) for the entire year (Tables 11 and 13). For the May to September period, retained catch consisted of 10.9% halibut, 10.6% lingcod, 28.5% rockfish, and 50.0% other groundfish.

More accurate species identification has allowed catch estimates for most groundfish species, including rockfish. Previous reports (Hardie *et al.* 2003) have identified only three species of groundfish and nine species of rockfish; however, beginning in 2007 an additional nine species of groundfish were identified by creel surveyors. Lingcod and spiny dogfish (*Squalus acanthias*) catches have been recorded the longest and halibut recording began in 1998. Since 2000, all species of groundfish intercepted in the survey, i.e. retained catch that is observed by a creel surveyor, have had an estimate generated. A taxonomic reference of all species reported in 2009 is presented in Appendix E.

Groundfish retained in 2009 (35,392) increased 57.0% from 2008 (20,158). Rockfish comprised the largest proportion of this catch in 2009 at 28.5% along with starry flounder (*Platichthys stellatus* or *Inopsetta ischyra*) at 14.7%, halibut at 10.9%, rock sole (*Lepidopsetta bilineata*) at 10.7%, and lingcod at 10.6%. From May to September, halibut and lingcod retentions have increased relative to five-year averages by 239.4% (five-year average = 1141, 2009 = 3,872) and 66.6% (five-year average = 2,255, 2009 = 3,756), respectively. Rockfish retention increased by about 32.1% from the five-year average of 7,625 to 10,072 in 2009 (Tables 11 and 13, Figure 16).

The 2009 catch of groundfish species was not evenly distributed across the study area. Retained rockfish was highest in creel areas 17, 20(SG), and 13 with 21.9%, 21.0%, and 18.1% of the total catch, respectively (Table 13). The only area without any estimated lingcod retained was creel area 29. Lingcod retention was highest in creel area 13 (23.8%), followed by creel area 17 (22.1%), and creel area 20(SG) (17.9%; Table 13). Halibut retained were limited to creel areas 19 (82.7%), 20(SG) (13.2%), 13 (2.5%), 14 (1.0%), and 18 (0.6%; Table 13). Table 15 provides a summary of groundfish kept for the entire survey period by major catch areas. Tables 12 and 14 provide summaries of groundfish releases by month and creel area respectively. A breakdown of lingcod releases, by legal versus sub-legal size categories, is provided in Appendices C-20 and C-21 respectively.

Since 2001, nine species of rockfish have been identified throughout the survey. In 2009, kept and release estimates were grouped into two categories; group 1 and group 2. Rockfish group 1 consists of any catch for china (*Sebastes nebulosus*), copper (*S. caurinus*), quillback (*S. maliger*), tiger (*S. nigrocinctus*), and Yelloweye (*S. ruberrimus*) and group 2 consists of any other rockfish species, including those that were unidentified. Only two species, copper and quillback, showed considerable retention in the SG for

2009 (Table 16). Tables 11 and 12 provide rockfish catch summaries by month and Tables 13 and 14 by creel area. Figure 16 displays monthly estimated catches along with the five year average.

The estimated retained CPUE for groundfish varied through the creel survey period across species. Retained CPUE for rockfish ranged from a high of 0.12 in May to 0.01 in October and averaged 0.09 for the entire year (Figure 17; Appendix D-3). Kept and released CPUE for the creel survey is summarized by creel area (Appendix D-7) and by month (Appendix D-3) for both rockfish and groundfish in general. The CPUE for both groundfish and rockfish for log data are presented in Appendices D-4 and D-8 by month and creel area respectively. Kept CPUE for halibut during the creel survey ranged from 0.48 in March to 0.01 in July, November, and December and averaged 0.05 for the year (Appendix D-1). Lingcod retained CPUE ranged from 0.07 in May to 0.01 in October and averaged 0.03 for the year (Appendix D-1). Released CPUE is presented by month and creel area in Appendix D-1 and D-5, respectively. The CPUE's for the log data used with the estimates in 2009 are displayed in Appendix D-2 by month and Appendix D-6 by creel area.

BIOLOGICAL DATA

Adipose-clipped chinook and coho

In 2009, for the entire survey period, 2,223 chinook (5.2% of total estimated catch; 92.5% of catch passing by creel observers) were examined for adipose fin clips. Of the chinook examined during the May to September period, 26.9% had clips. During this period, the observed percentage of chinook adipose-clips was 36.5% for Victoria region, 7.6% for South Gulf, and 5.7% for the North Gulf (Table 17). Chinook kept catch from May to September was 7,704 adipose-clipped, 28,891 unclipped, and 865 unknown for a total of 37,460 pieces (Appendix C-7 and C-8). Of retained chinook with known mark status, 79.4% of adipose-clipped occurred in creel area 20(SG), 12.4% in creel area 19 and 4.2% in creel area 13 (Appendix C-8). Unclipped chinook retention was split between two main areas; 42.5% in creel area 20(SG) and 26.4% in creel area 13 (Appendix C-8). Releases by marked, unmarked, and unknown status are also presented in Appendix C-7 by month and in Appendix C-8 by creel area.

For the entire survey period, 488 coho (5.7% of total catch; 95.5% of catch passing by creel observers) were examined for adipose fin clips. Among coho examined for this same period, 84.0% had adipose clips. Regionally, percentages of adipose clips were 83.2%, 100.0%, and 80.6% for Victoria, South Gulf, and North Gulf, respectively (Table 18). Coho kept catch from May to September was 6,573 adipose-clipped, 1,533 unclipped, and 75 unknown for a total of 8,182 pieces (Appendix C-5). Of coho with known mark status, 76.2% of adipose-clipped occurred in creel area 20(SG), 15.6% in creel area 13 and 4.6% in creel area 28 (Appendix C-6). Unclipped coho retention was split between two main areas; 74.8% in creel area 20(SG) and 19.9% in creel area 13

(Appendix C-6). Releases by marked, unmarked, and unknown status are also presented in Appendix C-5 by month and in Appendix C-6 by creel area.

In 2009, of the 880 heads returned to the Sport Head Recovery Program (SHRP) caught in the SG survey area, 173 adipose-clipped Chinook contained a CWT (19.7%). Fifty-one chinook heads were excluded from creel area 20(SG) as they were listed as caught in PFMA 20 in general. The number of CWT's recovered by stock are summarized in Table 19. Further information on the SHRP can be obtained from the web at <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/tag-etiquette/SHRP-PRTS-eng.htm> (accessed 2012 Apr 04) or by calling 1-866-483-9994.

Catch-at-age for chinook

During 2009, 884 chinook were sampled for scales. From these scale samples, 646 were sent in to the aging lab at the Pacific Biological Station (PBS) to be aged resulting in 510 readable samples; 136 could not be aged due to regenerated scales or a lack of fresh water annuli. Table 20 lists the monthly number and percent age composition of readable chinook samples. All ages represent total age at year of life caught (including both freshwater and marine life stages – i.e. Gilbert-Rich age (Groot and Margolis 1991)). Age data are summarized graphically in Figure 18. Monthly age proportions were applied to estimated monthly chinook catches kept to provide a breakdown by age group (Table 21).

From 2004 to 2008, the chinook recreational kept catch in the SG showed a much higher average retention of 3-year olds (47.9%) when compared to 2009. In 2009, 28.2% were 3-year olds and the rest of the age classes were higher than the 5 year averages (Table 23). This equates to a 58.9% drop in the proportion of 3 year old chinook when compared to the 5 year average which suggests that there were less 3 year olds available to be caught due to either a decrease in survival or changes in migration behaviour.

Mean length-at-age for chinook and length for coho

In 2009, creel survey staff measured 2.4% of the total (n=43,137) retained chinook during interviews for the entire survey period. The average fork length (FL) of measured chinook was 728 mm (n = 1,055; Figure 19). Length at age by month, where length and age samples were collected from the same individual fish (n=499), are presented in Table 22. The overall mean length of age 3 and 4 fish were 674 and 831 mm, respectively. The largest salmon sampled was a 1060 mm FL chinook landed at Pedder Bay Marina in July caught in creel area 20(SG).

Of all chinook measured for length by SG creel survey staff in 2009, 32 (3.0%) were smaller than the legal size limit (below 450 mm in creel areas 19 and 20(SG) and 620 mm in creel areas 13-18, 28, and 29). Of the 849 retained chinook that were measured from May to September in all areas, 29 (3.4%) were sub-legal. Historical rates of sub-legal sized retained chinook observed in the creel survey are presented in Table 24.

The average fork length of measured coho salmon was 610 mm in 2009 (n=206; Figure 20). In total, 42.2% of coho observed during interviews (n=488) were measured. The largest coho sampled was 830 mm FL landed at Pedder Bay Marina in October caught in creel area 20(SG).

SUMMARY

A tidal recreational fishery creel survey was conducted in the Strait of Georgia (SG) in 2009 to estimate the catch of all reported recreational finfish species and the total recreational fishing boat trips. Logbook data was also collected. In this report, data are presented by month and creel area.

For the entire creel survey period (May to September in all creel areas and a full 12 months for creel area 19 and the portion of creel area 20 east of Sheringham Point (20(SG)), recreational fishers made an estimated 116,215 boat trips. A total of 7,114 boat trips (6.1%) were interviewed at 33 landing sites in the SG creel survey area. A total of 87 aerial surveys were used to count fishing effort.

Based on these data, recreational anglers retained an estimated 170,240 finfish pieces of which 77.8% were salmon and 22.2% were groundfish. The 132,451 landed salmon consisted of 43,137 (32.6%) chinook, 8,623 (6.5%) coho, 197 (0.1%) sockeye, 80,272 (60.6%) pink, 160 (0.1%) chum, and 62 unidentified salmon. The 37,789 landed groundfish consisted of 5,295 (14.0%) halibut, 3,770 (10.0%) lingcod, 10,170 (26.9%) rockfish, and 18,554 (49.1%) other groundfish. Anglers also released 245,778 finfish during the same period which consisted of 65.4% salmon and 34.6% groundfish. The 160,796 released salmon consisted of 64,654 (40.2%) chinook, 34,569 (21.5%) coho, 2,220 (1.4%) sockeye, 25,329 (39.2%) pink, 8 chum, and 34,016 (21.2%) unidentified salmon. The 84,982 released groundfish consisted of 582 (0.7%) halibut, 25,859 (30.4%) lingcod, 27,165 (32.0%) rockfish, and 31,375 (36.9%) other groundfish.

Comparisons of the 2009 estimates are made to the previous five years of catch estimates to determine trends in catch, effort, and catch per unit effort. Based on biological samples, we estimate that 36.9% of chinook and 75.0% of coho were adipose fin-clipped. In addition, age composition and length frequency distributions of chinook are presented.

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LITERATURE CITED

Carter, E.W., and Zetterberg, P.R. 2010. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 2007. Can. Manuscr. Rep. Fish. Aquat. Sci. 2914: xiii + 125 p.

Collicutt, L.D., and Shardlow, T.F. 1990. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1989. Can. Manuscr. Rep. Fish. Aquat. Sci. 2087: 75 p.

Collicutt, L.D., and Shardlow, T.F. 1992. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1990. Can. Manuscr. Rep. Fish. Aquat. Sci. 2109: 76 p.

Collicutt, L.D., and Shardlow, T.F. 1993. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1991. Can. Manuscr. Rep. Fish Aquatic Sci. 2137: 77 p.

DFO 2011. State of the Pacific Ocean 2010. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/032.

DPA Consulting Ltd. 1982. Georgia Strait sport fishing creel survey 1980-81. Final Report, prepared for Department of Fisheries and Oceans, Pacific Region by DPA Consulting Limited, Vancouver B.C. 78 p.

English, K., Searing, G.F., and Nagtegaal, D.A. 2002. Review of the Strait of Georgia recreational creel survey, 1983-1999. Can Tech. Rep. Fish. Aquat. Sci. 2414: 81p.

Groot, C., and Margolis, L. editors. Preface. Vancouver: UBC Press. 1991. Pacific salmon life histories. x.

Hardie, D.C., Nagtegaal, D.A., and Nagy, L. 1999. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 1998. Can. Manuscr. Rep. Fish. Aquat. Sci. 2500: 92 p.

Hardie, D.C., Nagtegaal, D.A., and Nagy, L. 2001. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 1999. Can. Manuscr. Rep. Fish. Aquat. Sci. 2553: 111 p.

Hardie, D.C., Nagtegaal, D.A., Hein, K., and Sturhahn, J. 2002. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 2000. Can. Manuscr. Rep. Fish. Aquat. Sci. 2608: 112 p.

Hardie, D.C., Nagtegaal, D.A., Sturhahn, J., and Hein, K. 2003. Strait of Georgia and Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 2001. Can. Manuscr. Rep. Fish. Aquat. Sci. 2640: 107 p.

Kuhn, B.R., Lapi, L., and Hamer, J.M. 1988. An Introduction to the Canadian Database on Marked Pacific Salmonids. Can. Tech. Rep. Fish. Aquat. Sci. 1649: 56 p.

MacLellan, S.E. 2004. Guide for sampling structures used in age determination of Pacific Salmon. Department of Fisheries and Oceans, Fisheries Research Branch, Pacific Biological Station, Nanaimo, B.C. 28 p.

McFarlane, G.A., and King, J.R. 2001. The validity of the fin-ray method of age determination for lingcod (*Ophiodon elongatus*). 2001 Fish. Bull. 99: 459-464.

Nagtegaal, D.A., HopWo, L., and Zetterberg, P.R. 2009. SOG Recreational effort (boat) counts. UNPUBLISHED TRAINING MANUAL, Fisheries and Oceans Canada, Nanaimo, B.C., 4p.

O'Brien, D.S., and Carter, T. 2009. 2009 Strait of Georgia creel survey site selection review. UNPUBLISHED REPORT, Fisheries and Oceans Canada, Nanaimo, B.C., 17p.

Shardlow, T.F. 1985. Georgia Strait creel survey boundary descriptions. UNPUBLISHED REPORT, Fisheries and Oceans Canada, Nanaimo, B.C., 16p.

Shardlow, T.F., and Collicutt, L.D. 1989 a. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1985. Can. Manuscr. Rep. Fish. Aquat. Sci. 2033: 60 p.

Shardlow, T.F., and Collicutt, L.D. 1989 b. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1986. Can. Manuscr. Rep. Fish. Aquat. Sci. 2034: 61 p.

Shardlow, T.F., and Collicutt, L.D. 1989 c. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1987. Can. Manuscr. Rep. Fish. Aquat. Sci. 2035: 62 p.

Shardlow, T.F., and Collicutt, L.D. 1989 d. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1988. Can. Manuscr. Rep. Fish. Aquat. Sci. 2036: 63 p.

Zetterberg, P.R., Maher, J.M., and Watson, N.M. 2009. Strait of Georgia recreational fishery creel survey finfish data, 2002 to 2006. Can. Data Rep. Fish. Aquat. Sci. 1212: xix + 299 p.

Zetterberg, P.R., and Carter, E.W. 2010. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 2008. Can. Manuscr. Rep. Fish. Aquat. Sci. 2929: xiv + 123 p.

TABLES

Table 1. Number of finfishing interviews by month and creel area and number of aerial surveys in the Strait of Georgia (SG) creel survey, 2009.

Month	Creel Area										Monthly Total	Monthly Aerial Surveys[1]
	13	14	15	16	17	18	19	20(SG)	28	29		
Jan	-	-	-	-	-	2	115	34	-	-	151	6
Feb	-	-	-	-	-	5	100	30	-	-	135	6
Mar	-	-	-	-	-	1	136	24	-	-	161	6
Apr	-	-	-	-	-	5	336	55	-	-	396	6
May	61	41	30	10	68	24	245	126	19	39	663	6
Jun	114	87	28	33	84	32	142	329	37	30	916	6
Jul	194	106	33	63	119	45	217	500	70	40	1387	12
Aug	247	184	25	78	101	69	205	713	76	56	1754	11
Sep	100	60	13	47	57	58	173	459	72	26	1065	9
Oct	-	-	-	-	-	1	78	172	-	-	251	7
Nov	-	-	-	-	-	1	34	76	-	-	111	6
Dec	-	-	-	-	-	1	80	43	-	-	124	6
Total	716	478	129	231	429	244	1861	2561	274	191	7114	87

[1] Number of monthly aerial surveys is a summation of two separate flights enumerating the entire SG survey area as a whole.

Interviews showing in Area 18 outside the normal operating months are results of interviews conducted in Area 19 Sidney.

Table 2. Number of logged trips received by month and creel area in the SG, 2009.

Month	Creel Area										Monthly Total
	13	14	15	16	17	18	19	20(SG)	28	29	
Jan	0	0	0	0	0	0	0	0	0	3	3
Feb	1	0	0	0	0	0	0	0	0	2	3
Mar	0	0	0	0	0	0	10	3	1	4	18
Apr	0	0	0	0	2	0	31	1	0	2	36
May	7	4	1	10	7	0	13	3	1	7	53
Jun	53	17	6	25	1	0	2	5	0	17	126
Jul	228	4	1	53	2	0	3	4	3	8	306
Aug	281	2	0	31	0	0	0	3	2	12	331
Sep	137	0	2	13	0	0	0	0	0	11	163
Oct	9	0	0	0	0	0	0	0	0	0	9
Nov	0	0	0	0	0	0	0	0	0	0	0
Dec	1	1	0	0	0	0	0	0	0	0	2
Total	717	28	10	132	12	0	59	19	7	66	1050

Table 3. Tidal effort (boat trips), kept and released salmon catch estimates in the SG recreational fishery, 1985 to 2009[1].

Year	Effort	Kept					Released				
		Chinook	Coho	Sockeye	Pink	Chum	Chinook	Coho	Sockeye	Pink	Chum
1985	549986	196888	670753	15	89764	-	-	-	-	-	-
1986	502334	146781	530345	873	3138	606	-	-	-	-	-
1987	506550	94351	602075	8491	89833	682	-	-	-	-	-
1988	561495	85370	947481	16271	8486	663	-	-	-	-	-
1989	515762	101365	447555	13345	122840	3329	170588	-	-	-	-
1990	477995	85967	581952	30606	11549	652	181348	-	-	-	-
1991	394285	98831	123571	23401	248971	888	150429	-	-	-	-
1992	397322	92725	505289	6745	19075	843	134651	-	-	-	-
1993	459112	109060	777072	23600	172713	1766	167960	-	-	-	-
1994	410939	61312	273624	14038	18453	289	133835	-	-	-	-
1995	294339	56829	72999	5897	183859	1481	107784	-	-	-	-
1996	280354	87856	127107	2365	7779	3469	176607	-	-	-	-
1997	249439	53730	98540	16819	111003	481	60794	-	-	-	-
1998	146931	18914	1833	4474	6848	3556	32506	20570	-	-	-
1999	150847	41500	310	491	26458	790	13043	6021	-	-	-
2000[2]	148070	27193	4296	6367	9762	1098	50755	34577	468	3710	41
2001[2]	179654	44314	13310	3252	118592	405	53182	121527	2083	37284	214
2002[2]	191141	66198	6357	5133	11950	597	58133	32689	3203	796	0
2003[2]	156670	34442	16226	2917	104556	910	24155	43653	377	25468	20
2004[2]	114262	36207	10410	3340	4527	8649	22307	35564	1438	834	1349
2005[2]	92117	27306	4789	6949	68479	4507	15199	21156	2619	23332	454
2006[2]	95153	26728	1766	29800	1594	2644	6853	4430	2034	301	11
2007[2]	96515	28665	4593	191	76560	416	32903	20302	2137	29485	0
2008[2]	77028	17936	1056	79	2256	508	9675	4961	228	515	0
2009[2]	106435	37460	8182	197	80194	137	54203	34516	2220	25305	8

[1] This table uses values from May to September inclusively for historical comparisons.

[2] Change in estimation methods (see English *et al.* 2002)

Table 4. Total effort, kept, and released catch estimates of all salmon in the SG recreational fishery, 1985 to 2009[1].

Year	Effort	Total Salmon Kept	Total Salmon Released	Total Kept and Released
1985	549986	957420	-	957420
1986	502334	681743	-	681743
1987	506550	795432	-	795432
1988	561495	1058271	-	1058271
1989	515762	688434	170588	859022
1990	477995	710726	181348	892074
1991	394285	495662	150429	646091
1992	397322	624677	134651	759328
1993	459112	1084211	167960	1252171
1994	410939	367716	133835	501551
1995	294339	321065	107784	428849
1996	280354	228576	176607	405183
1997	249439	280573	60794	341367
1998	146931	35625	53076	88701
1999	150847	69549	19064	88613
2000[2]	148070	48716	134328	183044
2001[2]	179654	180211	254234	434445
2002[2]	191141	90261	106884	197145
2003[2]	156670	159115	103273	262388
2004[2]	114262	63213	77670	140884
2005[2]	92117	112030	69080	181110
2006[2]	95153	62698	17054	79753
2007[2]	96515	110450	88168	198618
2008[2]	77028	21855	17392	39247
2009[2]	106435	126233	146928	273161

[1] This table uses values from May to September inclusively for historical comparisons.

[2] Change in estimation methods (see English *et al.* 2002)

Table 5. Salmon kept by month[4], effort, and species in the SG, 2009.

Month	Type[5]	Effort	SE	Chin[1]	SE	Coho	SE	Sock[2]	SE	Pink	SE	Chum	SE	No ID[3]	SE	Total Monthly Kept	Total Monthly SE
Jan	Creel	968	200	590	147	0	0	0	0	0	0	0	0	0	0	590	147
Feb	Creel	780	245	328	85	0	0	0	0	0	0	0	0	0	0	328	85
Mar	Creel	891	230	49	23	0	0	0	0	0	0	0	0	0	0	49	23
	Log	13	-	13	-	0	-	0	-	0	-	0	-	0	-	13	-
Apr	Creel	1958	373	77	33	0	0	0	0	0	0	0	0	0	0	77	33
	Log	32	-	19	-	0	-	0	-	0	-	0	-	0	-	19	-
May	Creel	14139	1315	4952	1385	0	0	0	0	0	0	0	0	0	0	4952	1385
	Log	46	-	23	-	0	-	0	-	0	-	0	-	0	-	23	-
Jun	Creel	18650	2241	6923	1000	678	248	45	52	15	15	0	0	0	0	7660	1032
	Log	92	-	72	-	0	-	0	-	0	-	0	-	0	-	72	-
Jul	Creel	24821	2314	6965	628	1936	499	102	52	11056	2993	9	10	0	0	20068	3099
	Log	81	-	22	-	0	-	0	-	0	-	0	-	0	-	22	-
Aug	Creel	32624	1739	13761	993	3424	469	50	31	57165	5669	30	24	39	25	74470	5775
	Log	194	-	112	-	5	-	0	-	0	-	0	-	0	-	117	-
Sep	Creel	15772	956	4626	466	2139	291	0	0	11958	1290	98	49	23	18	18845	1403
	Log	16	-	3	-	0	-	0	-	0	-	0	-	0	-	3	-
Oct	Creel	2302	440	1831	428	442	144	0	0	77	62	19	14	0	0	2370	456
Nov	Creel	997	214	624	213	0	0	0	0	0	0	3	4	0	0	627	213
Dec	Creel	1839	441	2145	458	0	0	0	0	0	0	0	0	0	0	2145	458
Total	All	116215	4095	43137	2233	8623	797	197	80	80272	6539	160	57	62	31	132451	6957

[1] Chin = chinook

[2] Sock = sockeye

[3] No ID = unidentified salmon

[4] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[5] Log = logbook reported data incorporated into final estimate

Table 6. **Salmon kept by creel area[4], effort, and species in the SG, 2009.**

Creel Area	Type[5]	Effort	SE	Chin[1]	SE	Coho	SE	Sock[2]	SE	Pink	SE	Chum	SE	No ID[3]	SE	Total Area Kept	Total Area SE
13	Creel	19209	871	8487	832	1408	361	0	0	24266	2696	67	36	8	8	34237	2845
	Log	204	-	143	-	5	-	0	-	0	-	0	-	0	-	148	-
14	Creel	9955	743	3091	493	145	96	0	0	1330	263	0	0	0	0	4566	568
	Log	15	-	9	-	0	-	0	-	0	-	0	-	0	-	9	-
15	Creel	1899	180	187	44	0	0	0	0	0	0	0	0	0	0	187	44
	Log	8	-	8	-	0	-	0	-	0	-	0	-	0	-	8	-
16	Creel	2298	170	123	36	0	0	0	0	0	0	0	0	0	0	123	36
	Log	122	-	33	-	0	-	0	-	0	-	0	-	0	-	33	-
17	Creel	11124	998	3993	1352	0	0	0	0	9	10	0	0	0	0	4002	1352
	Log	10	-	13	-	0	-	0	-	0	-	0	-	0	-	13	-
18	Creel	3818	279	307	68	0	0	0	0	777	172	0	0	0	0	1084	185
	Log	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
19	Creel	16214	979	2678	296	146	40	0	0	2672	382	9	10	0	0	5505	485
	Log	56	-	33	-	0	-	0	-	0	-	0	-	0	-	33	-
20 (SG)	Creel	41832	3621	22864	1442	6559	699	197	80	50749	5935	84	43	54	30	80508	6148
	Log	10	-	12	-	0	-	0	-	0	-	0	-	0	-	12	-
28	Creel	5097	311	436	113	308	75	0	0	303	111	0	0	0	0	1047	175
	Log	6	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
29	Creel	4294	396	707	184	52	17	0	0	164	105	0	0	0	0	923	213
	Log	43	-	13	-	0	-	0	-	0	-	0	-	0	-	13	-
Total	All	116215	4095	43137	2233	8623	797	197	80	80272	6539	160	57	62	31	132451	6957

[1] Chin - chinook

[2] Sock = sockeye

[3] No ID = unidentified salmon

[4] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[5] Log = logbook reported data incorporated into final estimate

Table 7. Salmon released by month[4], effort, and species in the SG, 2009.

Month	Type[6]	Effort	SE	Chin[1]	SE	Coho	SE	Sock[2]	SE	Pink	SE	Chum	SE	No ID[3]	SE	Total Monthly Rel[5]	Total Monthly SE
Jan	Creel	968	200	178	61	0	0	0	0	0	0	0	0	0	0	178	61
Feb	Creel	780	245	46	18	0	0	0	0	0	0	0	0	0	0	46	18
Mar	Creel	891	230	19	23	0	0	0	0	0	0	0	0	0	0	19	23
	Log	13	-	3	-	0	-	0	-	0	-	0	-	0	-	3	-
Apr	Creel	1958	373	29	16	0	0	0	0	0	0	0	0	0	0	29	16
	Log	32	-	4	-	0	-	0	-	0	-	0	-	0	-	4	-
May	Creel	14139	1315	5731	1602	39	29	0	0	0	0	0	0	0	0	5770	1603
	Log	46	-	14	-	0	-	0	-	0	-	0	-	0	-	14	-
Jun	Creel	18650	2241	4617	698	2054	657	15	15	134	116	0	0	89	69	6909	968
	Log	92	-	21	-	0	-	0	-	0	-	0	-	0	-	21	-
Jul	Creel	24821	2314	7715	1044	7569	1630	907	343	2981	910	0	0	1229	523	20400	2228
	Log	81	-	11	-	0	-	0	-	0	-	0	-	0	-	11	-
Aug	Creel	32624	1739	19189	2257	15540	2030	1178	278	19646	3132	0	0	11939	1901	67493	4766
	Log	194	-	9	-	230	-	0	-	0	-	0	-	0	-	239	-
Sep	Creel	15772	956	16896	2286	9083	1106	120	66	2544	719	8	8	17419	2795	46071	3845
	Log	16	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
Oct	Creel	2302	440	5962	1786	53	35	0	0	24	29	0	0	2851	1183	8891	2143
Nov	Creel	997	214	880	284	0	0	0	0	0	0	0	0	393	248	1273	377
Dec	Creel	1839	441	3329	987	0	0	0	0	0	0	0	0	96	59	3425	988
Total	All	116215	4095	64654	4326	34569	2904	2220	447	25329	3342	8	8	34016	3629	160796	7189

[1] Chin = chinook

[2] Sock = sockeye

[3] No ID = unidentified salmon

[4] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[5] Rel = released

[6] Log = logbook reported data incorporated into final estimate

Table 8. Salmon released by creel area[4], effort, and species for the SG, 2009.

Creel Area	Type[6]	Effort	SE	Chin[1]	SE	Coho	SE	Sock[2]	SE	Pink	SE	Chum	SE	No ID[3]	SE	Total Area Rel[5]	Total Area SE
13	Creel	19209	871	6160	1266	8046	1556	928	314	7035	2375	0	0	62	58	22230	3125
	Log	204	-	12	-	229	-	0	-	0	-	0	-	0	-	241	-
14	Creel	9955	743	3815	653	1365	348	0	0	136	63	0	0	381	158	5697	759
	Log	15	-	1	-	0	-	0	-	0	-	0	-	0	-	1	-
15	Creel	1899	180	359	81	3	3	0	0	0	0	0	0	0	0	363	81
	Log	8	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
16	Creel	2298	170	293	70	7	4	0	0	0	0	0	0	0	0	299	70
	Log	122	-	22	-	0	-	0	-	0	-	0	-	0	-	22	-
17	Creel	11124	998	6136	1603	339	91	0	0	45	24	0	0	93	49	6612	1607
	Log	10	-	4	-	0	-	0	-	0	-	0	-	0	-	4	-
18	Creel	3818	279	474	110	686	487	0	0	188	66	0	0	141	48	1488	506
	Log	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
19	Creel	16214	979	3058	437	926	220	35	26	601	123	0	0	1150	236	5771	558
	Log	56	-	4	-	0	-	0	-	0	-	0	-	0	-	4	-
20 (SG)	Creel	41832	3621	41097	3680	22345	2360	1095	305	16577	2317	8	8	32088	3615	113210	6136
	Log	10	-	9	-	1	-	0	-	0	-	0	-	0	-	10	-
28	Creel	5097	311	684	196	362	90	5	4	650	362	0	0	0	0	1702	421
	Log	6	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
29	Creel	4294	396	2517	561	260	137	157	89	96	58	0	0	102	108	3132	597
	Log	43	-	10	-	0	-	0	-	0	-	0	-	0	-	10	-
Total	All	116215	4095	64654	4326	34569	2904	2220	447	25329	3342	8	8	34016	3629	160796	7189

[1] Chin - chinook

[2] Sock = sockeye

[3] No ID = unidentified salmon

[4] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[5] Rel = released

[6] Log = logbook reported data incorporated into final estimate

Table 9. Legal and sub-legal chinook[1] kept and released by month[2], effort, and species in the SG, 2009.

Month	Type[3]	Effort	SE	Chinook Kept	SE	Legal Chinook Released	SE	Sub-Legal Chinook Released	SE	Total Monthly Chinook Released	Total Monthly Chinook Released SE
Jan	Creel	968	200	590	147	12	12	166	59	178	61
Feb	Creel	780	245	328	85	3	3	42	18	46	18
Mar	Creel	891	230	49	23	0	0	19	23	19	23
	Log	13	-	13	-	3	-	0	-	3	-
Apr	Creel	1958	373	77	33	6	6	24	15	29	16
	Log	32	-	19	-	4	-	0	-	4	-
May	Creel	14139	1315	4952	1385	3508	1508	2222	543	5731	1602
	Log	46	-	23	-	14	-	0	-	14	-
Jun	Creel	18650	2241	6923	1000	441	257	4176	649	4617	698
	Log	92	-	72	-	21	-	0	-	21	-
Jul	Creel	24821	2314	6965	628	626	195	7088	1026	7715	1044
	Log	81	-	22	-	11		0	-	11	-
Aug	Creel	32624	1739	13761	993	709	198	18480	2248	19189	2257
	Log	194	-	112	-	9	-	0	-	9	-
Sep	Creel	15772	956	4626	466	428	168	16469	2280	16896	2286
	Log	16	-	3	-	0	-	0	-	0	-
Oct	Creel	2302	440	1831	428	225	95	5737	1783	5962	1786
Nov	Creel	997	214	624	213	186	94	694	268	880	284
Dec	Creel	1839	441	2145	458	1468	646	1861	746	3329	987
Total	All	116215	4095	43137	2233	7674	1697	56979	3979	64654	4326

[1] 1354 unidentified salmon were kept, and 34,016 unidentified salmon were released in SG in 2009 and were not included.

[2] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[3] Log = logbook reported data incorporated into final estimate

No sub-legal chinook were reported released in the usable logbook data.

Table 10. Legal and sub-legal chinook[1] kept and released by creel area[2], effort, and species in the SG, 2009.

Creel Area	Type[3]	Effort	SE	Chinook Kept	SE	Legal Chinook Released	SE	Sub-Legal Chinook Released	SE	Total Area Chinook Released	Total Area Chinook Released SE
13	Creel	19209	871	8487	832	133	66	6027	1264	6160	1266
	Log	204	-	143	-	12	-	0	-	12	-
14	Creel	9955	743	3091	493	377	231	3438	611	3815	653
	Log	15	-	9	-	1	-	0	-	1	-
15	Creel	1899	180	187	44	0	0	359	81	359	81
	Log	8	-	8	-	0	-	0	-	0	-
16	Creel	2298	170	123	36	1	1	291	70	293	70
	Log	122	-	33	-	22	-	0	-	22	-
17	Creel	11124	998	3993	1352	3313	1496	2823	577	6136	1603
	Log	10	-	13	-	4	-	0	-	4	-
18	Creel	3818	279	307	68	66	28	407	106	474	110
	Log	0	-	0	-	0	-	0	-	0	-
19	Creel	16214	979	2678	296	221	94	2837	426	3058	437
	Log	56	-	33	-	4	-	0	-	4	-
20 (SG)	Creel	41832	3621	22864	1442	3501	758	37595	3602	41097	3680
	Log	10	-	12	-	9	-	0	-	9	-
28	Creel	5097	311	436	113	0	0	684	196	684	196
	Log	6	-	0	-	0	-	0	-	0	-
29	Creel	4294	396	707	184	0	0	2517	561	2517	561
	Log	43	-	13	-	10	-	0	-	10	-
Total	All	116215	4095	43137	2233	7674	1697	56979	3979	64654	4326

[1] 1354 unidentified salmon were kept, and 34,016 unidentified salmon were released in SG in 2009 and were not included.

[2] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[3] Log = logbook reported data incorporated into final estimate

No sub-legal chinook were reported released in the usable logbook data.

Table 11. Groundfish kept by month[1], effort, and species in the SG, 2009.

Month	Type[5]	Effort	SE	Halibut	SE	Lingcod	SE	Other Groundfish[2]	SE	Rockfish Group 1[3]	SE	Rockfish Group 2[4]	SE	Total Monthly Kept	Total Monthly SE
Jan	Creel	968	200	0	0	0	0	0	0	0	0	0	0	0	0
Feb	Creel	780	245	0	0	0	0	28	23	0	0	0	0	28	23
Mar	Creel	891	230	428	136	0	0	8	8	4	4	0	0	440	137
	Log	13	-	9	-	0	-	0	-	0	-	0	0	9	-
Apr	Creel	1958	373	805	203	0	0	127	50	56	35	8	7	996	212
	Log	32	-	44	-	0	-	0	-	0	-	0	-	44	-
May	Creel	14139	1315	2003	485	992	185	1268	322	1472	329	244	135	5979	706
	Log	46	-	24	-	11	-	0	-	4	-	0	-	39	-
Jun	Creel	18650	2241	388	125	642	162	2380	688	1541	329	155	109	5107	797
	Log	92	-	2	-	11	-	5	-	10	-	2	-	30	-
Jul	Creel	24821	2314	265	71	743	153	3261	1212	1580	229	861	223	6711	1264
	Log	81	-	0	-	33	-	34	-	76	-	2	-	145	-
Aug	Creel	32624	1739	631	179	823	219	7755	3096	1567	286	888	290	11664	3135
	Log	194	-	1	-	16	-	1	-	19	-	5	-	42	-
Sep	Creel	15772	956	558	138	484	104	2983	1472	980	188	660	172	5665	1503
	Log	16	-	0	-	1	-	4	-	6	-	0	-	11	-
Oct	Creel	2302	440	112	51	14	10	69	33	5	6	10	12	209	63
Nov	Creel	997	214	8	6	0	0	459	561	9	8	6	7	482	561
Dec	Creel	1839	441	16	11	0	0	173	113	0	0	0	0	189	113
Total	All	116215	4095	5295	608	3770	377	18554	3759	7329	622	2841	440	37789	3901

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[2] Other Groundfish includes all other groundfish except halibut, lingcod, and any rockfish.

[3] Rockfish Group 1 includes china, copper, quillback, tiger, and yelloweye.

[4] Rockfish Group 2 includes all other rockfish not included in Rockfish Group 1.

[5] Log = logbook reported data incorporated into final estimate

Table 12. Groundfish released by month[1], effort, and species in the SG, 2009.

Month	Type[5]	Effort	SE	Halibut	SE	Lingcod	SE	Other Ground-fish[2]	SE	Rockfish Group 1[3]	SE	Rockfish Group 2[4]	SE	Total Monthly Released	Total Monthly SE
Jan	Creel	968	200	4	5	19	18	45	33	0	0	0	0	67	38
Feb	Creel	780	245	16	27	120	120	43	55	0	0	57	38	235	140
Mar	Creel	891	230	5	5	69	39	865	257	129	67	53	36	1121	271
	Log	13	-	3	-	0	-	1	-	2	-	0	-	6	-
Apr	Creel	1958	373	63	30	198	79	885	210	71	38	158	66	1375	239
	Log	32	-	2	-	15	-	24	-	0	-	0	-	41	-
May	Creel	14139	1315	330	112	5850	1206	3835	729	3858	1268	1901	475	15774	1957
	Log	46	-	3	-	40	-	16	-	9	-	2	-	70	-
Jun	Creel	18650	2241	73	51	5413	912	2910	655	2228	491	2516	620	13141	1374
	Log	92	-	0	-	38	-	57	-	30	-	1	-	126	-
Jul	Creel	24821	2314	66	33	5975	972	8531	992	2586	507	5464	1117	22621	1853
	Log	81	-	0	-	92	-	19	-	28	-	0	-	139	-
Aug	Creel	32624	1739	0	0	4476	806	9079	978	959	232	4668	930	19183	1589
	Log	194	-	0	-	42	-	15	-	21	-	3	-	81	-
Sep	Creel	15772	956	17	18	2410	382	3185	520	630	150	1227	235	7470	704
	Log	16	-	0	-	2	-	0	-	4	-	0	-	6	-
Oct	Creel	2302	440	0	0	764	329	695	250	40	33	287	123	1787	433
Nov	Creel	997	214	0	0	164	94	315	317	0	0	50	31	528	332
Dec	Creel	1839	441	0	0	174	117	857	360	0	0	181	93	1212	389
Total	All	116215	4095	582	135	25859	2044	31375	1891	10596	1479	16569	1677	84982	3574

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[2] Other Groundfish includes all other groundfish except halibut, lingcod, and any rockfish.

[3] Rockfish Group 1 includes china, copper, quillback, tiger, and yelloweye.

[4] Rockfish Group 2 includes all other rockfish not included in Rockfish Group 1.

[5] Log = logbook reported data incorporated into final estimate

Table 13. Groundfish kept by creel area[2], effort, and species in the SG, 2009.

Creel Area	Type[5]	Effort	SE	Halibut	SE	Lingcod	SE	Other Ground-fish[2]	SE	Rockfish Group 1[3]	SE	Rockfish Group 2[4]	SE	Total Area Kept	Total Area SE
13	Creel	19209	871	131	60	889	153	764	222	1317	341	40	30	3140	440
	Log	204	-	2	-	10	-	3	-	9	-	3	-	27	-
14	Creel	9955	743	52	19	297	134	430	140	241	86	64	21	1084	214
	Log	15	-	0	-	13	-	1	-	3	-	1	-	18	-
15	Creel	1899	180	0	0	93	37	19	9	165	72	9	7	286	81
	Log	8	-	0	-	1	-	0	-	0	-	0	-	1	-
16	Creel	2298	170	0	0	295	66	259	54	882	138	318	171	1754	235
	Log	122	-	0	-	46	-	39	-	101	-	5	-	191	-
17	Creel	11124	998	0	0	832	222	4410	2887	1606	326	937	276	7784	2927
	Log	10	-	0	-	2	-	0	-	0	-	0	-	2	-
18	Creel	3818	279	29	24	222	98	753	219	384	93	39	25	1428	260
	Log	0	-	0	-	0	-	0	-	0	-	0	-	0	-
19	Creel	16214	979	4305	577	390	116	2547	1238	966	218	242	108	8450	1392
	Log	56	-	75	-	0	-	0	-	0	-	0	-	75	-
20 (SG)	Creel	41832	3621	698	177	676	152	5542	1833	1542	272	1052	245	9509	1884
	Log	10	-	3	-	0	-	0	-	0	-	0	-	3	-
28	Creel	5097	311	0	0	4	4	2566	571	108	55	13	16	2690	574
	Log	6	-	0	-	0	-	0	-	0	-	0	-	0	-
29	Creel	4294	396	0	0	0	0	1222	671	3	4	118	120	1343	681
	Log	43	-	0	-	0	-	1	-	2	-	0	-	3	-
Total	All	116215	4095	5295	608	3770	377	18554	3759	7329	622	2841	440	37789	3901

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[2] Other Groundfish includes all other groundfish except halibut, lingcod, and any rockfish.

[3] Rockfish Group 1 includes china, copper, quillback, tiger, and yelloweye.

[4] Rockfish Group 2 includes all other rockfish not included in Rockfish Group 1.

[5] Log = logbook reported data incorporated into final estimate

Table 14. Groundfish released by creel area[3], effort, and species in the SG, 2009.

Creel Area	Type[5]	Effort	SE	Halibut	SE	Lingcod	SE	Other Ground-fish[2]	SE	Rockfish Group 1[3]	SE	Rockfish Group 2[4]	SE	Total Area Released	Total Area SE
13	Creel	19209	871	0	0	3628	889	844	270	25	17	1525	452	6021	1034
	Log	204	-	0	-	24	-	53	-	14	-	2	-	93	-
14	Creel	9955	743	0	0	972	208	2421	433	23	16	489	181	3904	514
	Log	15	-	0	-	31	-	8	-	17	-	0	-	56	-
15	Creel	1899	180	0	0	1174	232	507	89	650	333	0	0	2331	415
	Log	8	-	0	-	2	-	0	-	0	-	1	-	3	-
16	Creel	2298	170	0	0	2062	292	1187	222	1262	268	724	175	5235	487
	Log	122	-	0	-	120	-	20	-	54	-	0	-	194	-
17	Creel	11124	998	0	0	4701	1152	4693	976	4771	1320	4560	1213	18725	2344
	Log	10	-	0	-	3	-	5	-	0	-	0	-	8	-
18	Creel	3818	279	0	0	2767	813	3595	610	1650	268	714	197	8726	1069
	Log	0	-	0	-	0	-	0	-	0	-	0	-	0	-
19	Creel	16214	979	419	116	3852	569	11515	1028	877	197	2230	379	18892	1255
	Log	56	-	8	-	28	-	44	-	0	-	0	-	80	-
20 (SG)	Creel	41832	3621	155	69	6242	942	6003	924	1245	388	5733	902	19378	1646
	Log	10	-	0	-	2	-	0	-	2	-	0	-	4	-
28	Creel	5097	311	0	0	183	78	242	89	0	0	520	269	944	294
	Log	6	-	0	-	0	-	0	-	0	-	0	-	0	-
29	Creel	4294	396	0	0	51	32	238	131	0	0	69	48	358	143
	Log	43	-	0	-	19	-	2	-	7	-	3	-	31	-
Total	All	116215	4095	582	135	25859	2044	31375	1891	10596	1479	16569	1677	84982	3574

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[2] Other Groundfish includes all other groundfish except halibut, lingcod, and any rockfish.

[3] Rockfish Group 1 includes china, copper, quillback, tiger, and yelloweye.

[4] Rockfish Group 2 includes all other rockfish not included in Rockfish Group 1.

[5] Log = logbook reported data incorporated into final estimate

Table 15. Groundfish retained catch summary in the SG, 2009.

Groundfish Species	**Catch**	**% of Total Groundfish Catch**	**Major Catch Creel Area**
Halibut (*Hippoglossus stenolepis)*	5,295	14.0%	19
Lingcod (*Ophiodon elongatus*)	3,770	10.0%	13 and 17
Rockfish (*Sebastes* spp.)	10,170	26.9%	17 and 20
Other groundfish	18,554	49.1%	20
Total	**37,789**	**100%**	

Table 16. Rockfish retained catch summary in the SG, 2009.

Rockfish Species	**Catch**	**% of Total Groundfish Catch**	**Major Catch Creel Area**
Copper (*Sebastes caurinus)*	1,910	18.8%	17
Quillback (*Sebastes maliger*)	4,281	42.1%	13
Other (*Sebastes* spp.)	3,979	39.1%	20 and 17
Total	**10,170**	**100%**	

Table 17. Number of adipose-clipped chinook observed by month[1] and region[2] in the SG creel survey, 2009.

Month		North Gulf	South Gulf	Victoria	Total
Jan	Unmarked	0	2	34	36
to	Marked	0	3	89	92
Mar	Total	0	5	123	128
Apr	Unmarked	0	1	3	4
Apr	Marked	0	0	8	8
Apr	Total	0	1	11	12
May	Unmarked	23	63	11	97
May	Marked	3	5	14	22
May	Total	26	68	25	119
Jun	Unmarked	57	13	153	223
Jun	Marked	8	2	46	56
Jun	Total	65	15	199	279
Jul	Unmarked	116	24	147	287
Jul	Marked	2	2	60	64
Jul	Total	118	26	207	351
Aug	Unmarked	132	19	282	433
Aug	Marked	4	1	150	155
Aug	Total	136	20	432	588
Sep	Unmarked	17	15	109	141
Sep	Marked	4	1	133	138
Sep	Total	21	16	242	279
Oct	Unmarked	0	0	110	110
Oct	Marked	0	1	136	137
Oct	Total	0	1	246	247
Nov	Unmarked	0	0	71	71
to	Marked	0	0	149	149
Dec	Total	0	0	220	220
Total	Unmarked	345	137	920	1402
	Marked	21	15	785	821
	Total	366	152	1705	2223

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[2] North SG represented by creel areas 13 to16; South SG represented by creel areas 17, 18, 28, and 29 and Victoria represented by creel areas 19 and 20(SG).

Table 18. Number of adipose-clipped coho observed by month[1] and region[2] in the SG creel survey, 2009.

Month		North Gulf	South Gulf	Victoria	Total
Jan	Unmarked	0	0	0	0
to	Marked	0	0	0	0
Mar	Total	0	0	0	0
Apr	Unmarked	0	0	0	0
Apr	Marked	0	0	0	0
Apr	Total	0	0	0	0
May	Unmarked	0	0	0	0
May	Marked	0	0	0	0
May	Total	0	0	0	0
Jun	Unmarked	0	0	7	7
Jun	Marked	0	3	11	14
Jun	Total	0	3	18	21
Jul	Unmarked	0	0	5	5
Jul	Marked	1	7	89	97
Jul	Total	1	7	94	102
Aug	Unmarked	7	0	28	35
Aug	Marked	12	13	103	128
Aug	Total	19	13	131	163
Sep	Unmarked	0	0	21	21
Sep	Marked	16	2	99	117
Sep	Total	16	2	120	138
Oct	Unmarked	0	0	54	54
Oct	Marked	0	0	10	10
Oct	Total	0	0	64	64
Nov	Unmarked	0	0	0	0
to	Marked	0	0	0	0
Dec	Total	0	0	0	0
Total	Unmarked	7	0	115	122
	Marked	29	25	312	366
	Total	36	25	427	488

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

[2] North SG represented by creel areas 13 to16; South SG represented by creel areas 17, 18, 28, and 29 and Victoria represented by creel areas 19 and 20(SG).

Table 19. Origin of coded-wire tagged chinook caught in the SG, 2009.

Origin	Country	Total	Percent
SHUSWAP R LOW	CAN	15	8.7%
COWICHAN R	CAN	12	6.9%
PUNTLEDGE R	CAN	12	6.9%
CHILLIWACK R	CAN	9	5.2%
BIG QUALICUM R	CAN	8	4.6%
QUINSAM R	CAN	8	4.6%
HARRISON R	CAN	7	4.0%
ROBERTSON CR	CAN	3	1.7%
CHEMAINUS R	CAN	2	1.2%
NICOLA R	CAN	2	1.2%
CHEAKAMUS R	CAN	1	0.6%
DOME CR	CAN	1	0.6%
MARBLE R	CAN	1	0.6%
PORTEAU COVE	CAN	1	0.6%
GEORGE ADAMS (PURDY)	USA	9	5.2%
SAMISH (FRIDAY CR)	USA	9	5.2%
SKAGIT R	USA	9	5.2%
SKYKOMISH R	USA	7	4.0%
NOOKSACK -SF	USA	6	3.5%
SNAKE R-LOWR	USA	6	3.5%
BIG SOOS CR	USA	5	2.9%
FINCH CR	USA	5	2.9%
GROVERS CR	USA	5	2.9%
WENATCHEE R	USA	5	2.9%
STILLAGUAMISH R -NF	USA	4	2.3%
VOIGHT CR	USA	4	2.3%
CHAMBERS CR	USA	3	1.7%
KALAMA R	USA	2	1.2%
WASHINGTON UNKNOWN	USA	2	1.2%
WELLS HATCHERY	USA	2	1.2%
BIG CR HATCHERY	USA	1	0.6%
CLEAR CR	USA	1	0.6%
HOKO R	USA	1	0.6%
ISSAQUAH CR	USA	1	0.6%
MCKENZIE HATCHERY	USA	1	0.6%
SOOES R	USA	1	0.6%
UMATILLA R	USA	1	0.6%
WILLAMETTE R MID FK	USA	1	0.6%
	TOTAL	173	100.0%

Table 20. Monthly[2] number and percent age[1] composition of chinook sampled for age in the SG creel survey, 2009.

Month	Age 2		Age 3		Age 4		Age 5		Age 6		Total Sampled
	n	%	n	%	n	%	n	%	n	%	
Jan - Mar	0	0.0%	4	20.0%	16	80.0%	0	0.0%	0	0.0%	20
Apr	0	0.0%	1	33.3%	2	66.7%	0	0.0%	0	0.0%	3
May	0	0.0%	16	30.8%	34	65.4%	2	3.8%	0	0.0%	52
Jun	0	0.0%	13	16.0%	36	44.4%	32	39.5%	0	0.0%	81
Jul	3	3.0%	23	23.0%	61	61.0%	13	13.0%	0	0.0%	100
Aug	11	6.8%	53	32.7%	83	51.2%	15	9.3%	0	0.0%	162
Sep	19	37.3%	15	29.4%	12	23.5%	5	9.8%	0	0.0%	51
Oct	17	68.0%	7	28.0%	0	0.0%	1	4.0%	0	0.0%	25
Nov - Dec	3	18.8%	12	75.0%	1	6.3%	0	0.0%	0	0.0%	16
Total	53		144		245		68		0		510
Overall Age Composition of Catch	10.4%		28.2%		48.0%		13.3%		0.0%		

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[1] For the purposes of this report, age is defined as the year of life caught based on the Gilbert-Rich age.

[2] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Table 21. Monthly[2] estimated retained catches at age[1] of chinook in the SG, 2009.

Month	Age 2	Age 3	Age 4	Age 5	Age 6	Total
Jan - Mar	0	196	784	0	0	980
Apr	0	32	64	0	0	96
May	0	1531	3253	191	0	4975
Jun	0	1123	3109	2763	0	6995
Jul	210	1607	4262	908	0	6987
Aug	942	4539	7108	1285	0	13873
Sep	1725	1362	1089	454	0	4629
Oct	1245	513	0	73	0	1831
Nov - Dec	519	2077	173	0	0	2769
Total	4641	12979	19842	5675	0	43137
Annual Percentage	10.4%	28.2%	48.0%	13.3%	0.0%	100%

[1] For the purposes of this report, age is defined as the year of life caught based on the Gilbert-Rich age.

[2] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Table 22. Monthly[2] mean nose-fork length (L) at age[1] of chinook sampled in the SG creel survey, 2009.

Month	Age 2		Age 3		Age 4		Age 5		Age 6		Total Sampled
	n	L (mm)	n	L (mm)	n	L (mm)	n	L (mm)	n	L (mm)	
Jan - Mar	0	-	4	576	16	683	0	-	0	-	20
Apr	0	-	1	640	2	738	0	-	0	-	3
May	0	-	16	666	32	810	2	810	0	-	50
Jun	0	-	13	684	35	817	30	900	0	-	78
Jul	3	482	22	672	61	860	11	932	0	-	97
Aug	10	509	52	710	83	848	15	912	0	-	160
Sep	19	514	15	651	12	897	5	862	0	-	51
Oct	16	522	7	599	0	0	1	740	0	-	24
Nov - Dec	3	483	12	622	1	600	0	0	0	-	16
Total Samples/Mean	51	512	142	674	242	831	64	900	0	-	499

[1] For the purposes of this report, age is defined as the year of life caught based on the Gilbert-Rich age.

[2] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Table 23. Percent age[1] composition of chinook in the SG creel survey, 1985 to 2009.

Catch Year	2	3	4	5+	Reference
1985	6.6	70.8	20.6	2	Shardlow and Collicutt (1989a)
1986	10.9	44.9	40.4	3.8	Shardlow and Collicutt (1989b)
1987	7.8	62.1	25	5.2	Shardlow and Collicutt (1989c)
1988	26.4	35.3	35.4	2.8	Shardlow and Collicutt (1989d)
1989	3.1	83.3	10.5	3.1	Collicutt and Shardlow (1990)
1990	4	37	53	6	Hardie *et al.* (1999)
1991	2	67	25	6	Hardie *et al.* (1999)
1992	7	58	28	7	Hardie *et al.* (1999)
1993	1	69	26	4	Hardie *et al.* (1999)
1994	2	50	40	8	Hardie *et al.* (1999)
1995	2	62	29	7	Hardie *et al.* (1999)
1996	1	70	26	3	Hardie *et al.* (1999)
1997	0	66	29	5	Hardie *et al.* (1999)
1998	5	31	55	9	Hardie *et al.* (1999)
1999	0.3	73.4	21.4	4.9	Hardie *et al.* (2001)
2000	2.2	56.6	35	6.2	Hardie *et al.* (2002)
2001	1.4	59.0	32.8	4.4	Hardie *et al.* (2003)
2002	2.1	53.9	41.5	2.5	Unpublished data
2003	3.9	45.7	43.4	7.0	Unpublished data
2004	6.8	46.2	41.7	5.3	Unpublished data
2005	6.6	44.0	45.4	4.0	Unpublished data
2006	5.4	46.2	41.6	6.8	Unpublished data
2007	5.2	43.0	44.0	7.8	Carter and Zetterberg (2010)
2008	1.8	60.2	33.5	4.5	Zetterberg and Carter (2010)
2009	10.4	28.2	48.0	13.3	Calculated from 2009 data

[1] For the purposes of this report, age is defined as the year of life caught based on the Gilbert-Rich age.

Table 24. Sub-legal chinook retention in the SG creel survey, 1989 to 2009[1].

Year	Victoria[1]	Strait of Georgia[2]	Reference
1989	2%	20%	Collicutt and Shardlow (1990)
1990	1%	10%	Collicutt and Shardlow (1992)
1991	<1%	7%	Collicutt and Shardlow (1993)
1992	2%	2%	Hardie *et al.* (1999)
1993	1%	2%	Hardie *et al.* (1999)
1994	0%	2%	Hardie *et al.* (1999)
1995	0%	3%	Hardie *et al.* (1999)
1996	0%	1%	Hardie *et al.* (1999)
1997	0%	2%	Hardie *et al.* (1999)
1998	1%	6%	Hardie *et al.* (1999)
1999	0%	<1%	Hardie *et al.* (2001)
2000	1%	2%	Hardie *et al.* (2002)
2001	1%	2%	Hardie *et al.* (2003)
2002	0%	2%	Unpublished data
2003	<1%	1%	Unpublished data
2004	0%	2%	Unpublished data
2005	<1%	3%	Unpublished data
2006	2%	1%	Unpublished data
2007	1%	5%	Carter and Zetterberg (2010)
2008	2%	2%	Zetterberg and Carter (2010)
2009	2%	4%	Calculated from 2009 data

[1] Victoria represents creel areas 19 and 20(SG).

[2] Strait of Georgia represents creel areas 13 to 18, 28 and 29.

FIGURES

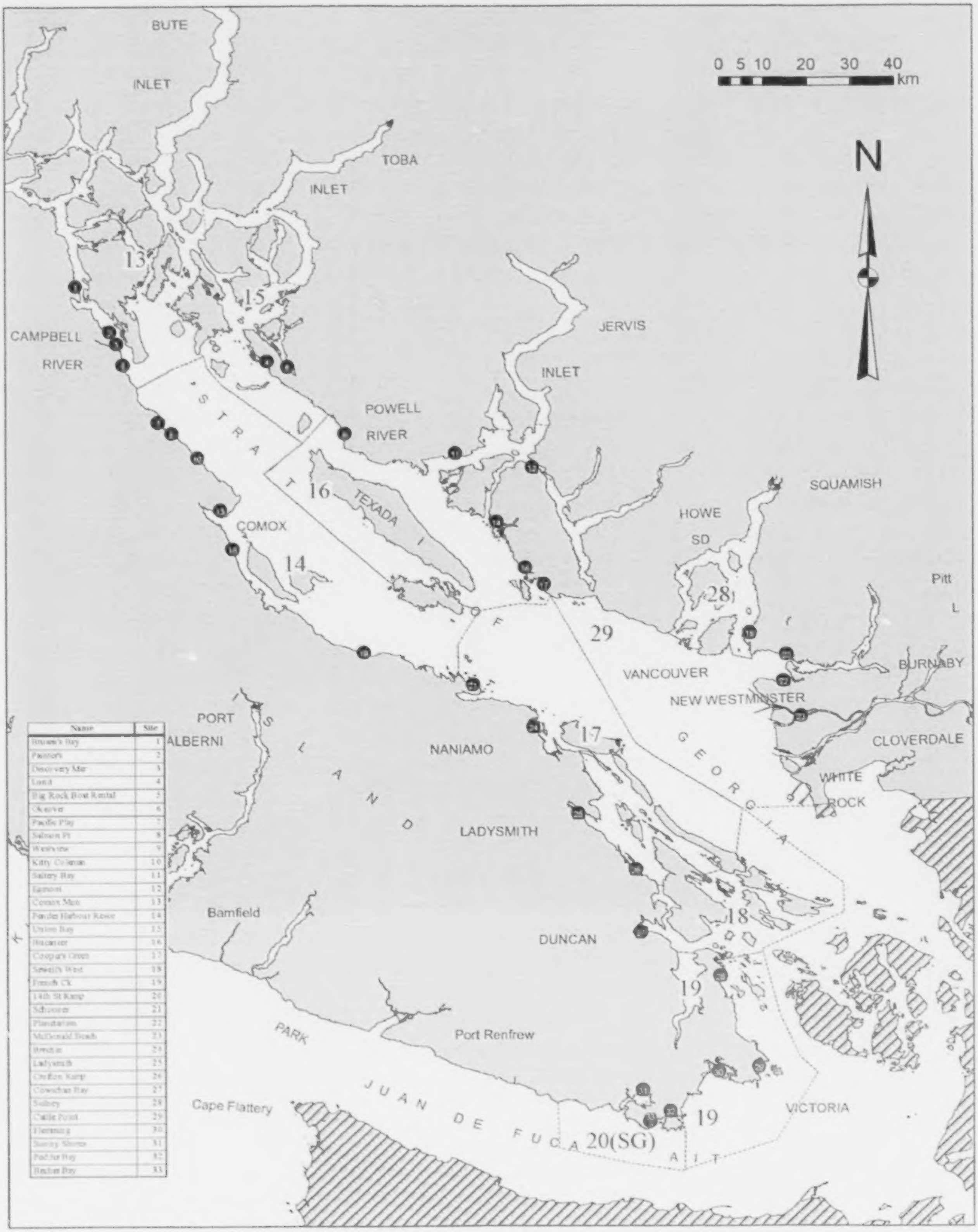
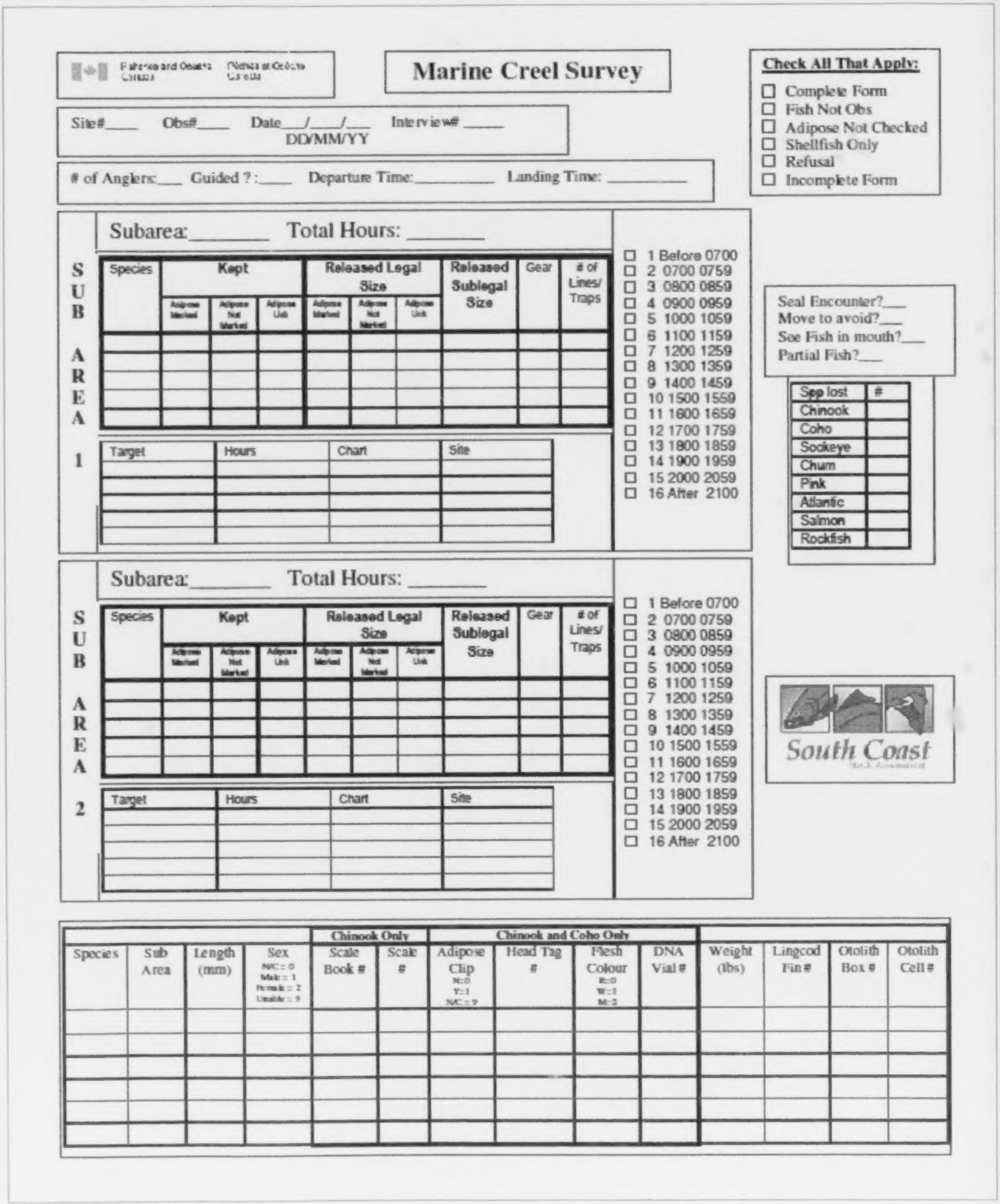

BUTE
INLET
TOBA
INLET
JERVIS
INLET
POWELL
RIVER
CAMPBELL
RIVER
COMOX
TEXADA
SQUAMISH
HOWE
SD
Pitt
L
VANCOUVER
BURNABY
NEW WESTMINSTER
CLOVERDALE
WHITE
ROCK
PORT
ALBERNI
NANIAMO
LADYSMITH
DUNCAN
Bamfield
Port Renfrew
PARK
Cape Flattery
VICTORIA
STRAIT OF GEORGIA
ISLAND
JUAN DE FUCA STRAIT
13
14
15
16
17
18
19
19
20(SG)
28
29
0 5 10 20 30 40 km
N
Name | Site
Brown's Bay | 1
Painter's | 2
Discovery Mar | 3
Lund | 4
Big Rock Boat Rental | 5
Okeover | 6
Pacific Play | 7
Salmon Pt | 8
Westview | 9
Kitty Coleman | 10
Saltery Bay | 11
Egmont | 12
Comox Mun | 13
Pender Harbour Resor | 14
Union Bay | 15
Buccaneer | 16
Cooper's Green | 17
Sewell's West | 18
French Ck | 19
14th St Ramp | 20
Schooner | 21
Plantation | 22
McDonald Beach | 23
Brechin | 24
Ladysmith | 25
Crofton Ramp | 26
Cowichan Bay | 27
Sidney | 28
Cattle Point | 29
Fleming | 30
Sunny Shores | 31
Pedder Bay | 32
Becher Bay | 33

Figure 1. SG creel survey study area and landing site locations, 2009.



Fisheries and Oceans Canada
Pêches et Océans Canada

Marine Creel Survey

Check All That Apply:
☐ Complete Form
☐ Fish Not Obs
☐ Adipose Not Checked
☐ Shellfish Only
☐ Refusal
☐ Incomplete Form

Site#____ Obs#____ Date___/___/___ DD/MM/YY Interview# _____

# of Anglers:___ Guided ? :____ Departure Time:_________ Landing Time: _________

SUB AREA 1

Subarea:_______ Total Hours: _______

Species	Kept			Released Legal Size			Released Sublegal Size	Gear	# of Lines/ Traps
	Adipose Marked	Adipose Not Marked	Adipose Unk	Adipose Marked	Adipose Not Marked	Adipose Unk			

Target	Hours	Chart	Site

☐ 1 Before 0700
☐ 2 0700 0759
☐ 3 0800 0859
☐ 4 0900 0959
☐ 5 1000 1059
☐ 6 1100 1159
☐ 7 1200 1259
☐ 8 1300 1359
☐ 9 1400 1459
☐ 10 1500 1559
☐ 11 1600 1659
☐ 12 1700 1759
☐ 13 1800 1859
☐ 14 1900 1959
☐ 15 2000 2059
☐ 16 After 2100

Seal Encounter?___
Move to avoid?___
See Fish in mouth?___
Partial Fish?___

Spp lost	#
Chinook	
Coho	
Sockeye	
Chum	
Pink	
Atlantic	
Salmon	
Rockfish	

SUB AREA 2

Subarea:_______ Total Hours: _______

Species	Kept			Released Legal Size			Released Sublegal Size	Gear	# of Lines/ Traps
	Adipose Marked	Adipose Not Marked	Adipose Unk	Adipose Marked	Adipose Not Marked	Adipose Unk			

Target	Hours	Chart	Site

☐ 1 Before 0700
☐ 2 0700 0759
☐ 3 0800 0859
☐ 4 0900 0959
☐ 5 1000 1059
☐ 6 1100 1159
☐ 7 1200 1259
☐ 8 1300 1359
☐ 9 1400 1459
☐ 10 1500 1559
☐ 11 1600 1659
☐ 12 1700 1759
☐ 13 1800 1859
☐ 14 1900 1959
☐ 15 2000 2059
☐ 16 After 2100

South Coast

				Chinook Only		Chinook and Coho Only							
Species	Sub Area	Length (mm)	Sex N/C = 0 Male = 1 Female = 2 Unable = 9	Scale Book #	Scale #	Adipose Clip N:0 Y:1 N/C = 9	Head Tag #	Flesh Colour R:0 W:1 M:2	DNA Vial #	Weight (lbs)	Lingcod Fin #	Otolith Box #	Otolith Cell #

Figure 2. SG creel survey interview form, 2009.

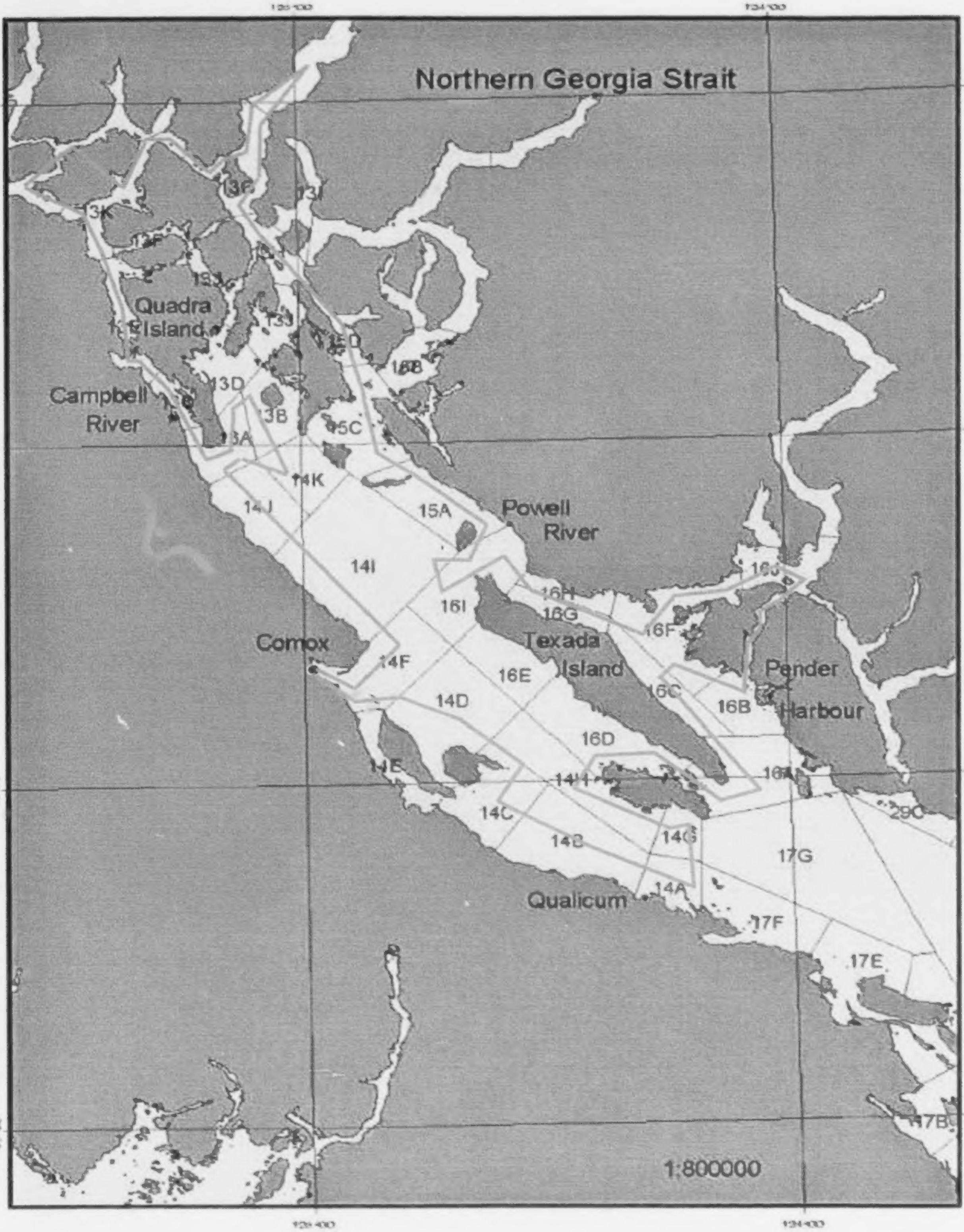

Northern Georgia Strait
13G
13I
13K
13F
13J
Quadra Island
13E
13D
15D
15B
Campbell River
13B
13A
15C
14K
14J
15A
Powell River
14I
16J
16H
16G
16I
16F
Comox
Texada Island
14F
16E
Pender Harbour
16C
16B
14D
16D
14E
14H
16A
29C
14C
14B
14G
17G
Qualicum
14A
17F
17E
17B
1:800000

Figure 3a. SG creel survey northern aerial survey route, 2009.

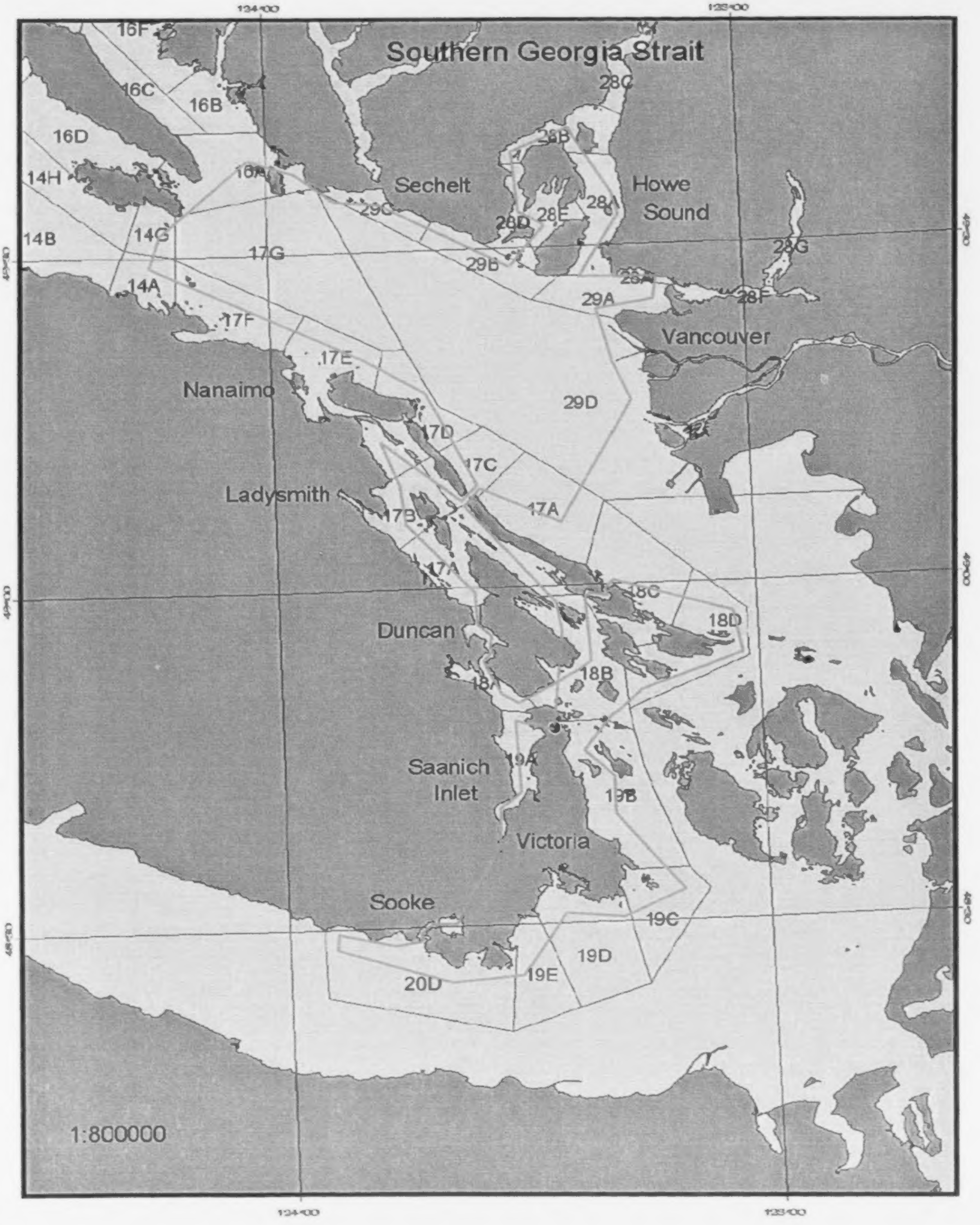

Southern Georgia Strait
16F
16C
16B
16D
14H
16A
14B
14G
17G
14A
17F
17E
Nanaimo
Sechelt
29C
28D
28E
28A
28B
28C
Howe
Sound
28G
29B
28A
28F
29A
Vancouver
29D
17D
17C
Ladysmith
17B
17A
17A
18C
18D
Duncan
18B
18A
Saanich
Inlet
19A
19B
Victoria
Sooke
19C
19D
19E
20D
1:800000
124°00
123°00
49°30
49°00
48°30

Figure 3b. SG creel survey southern aerial survey route, 2009.

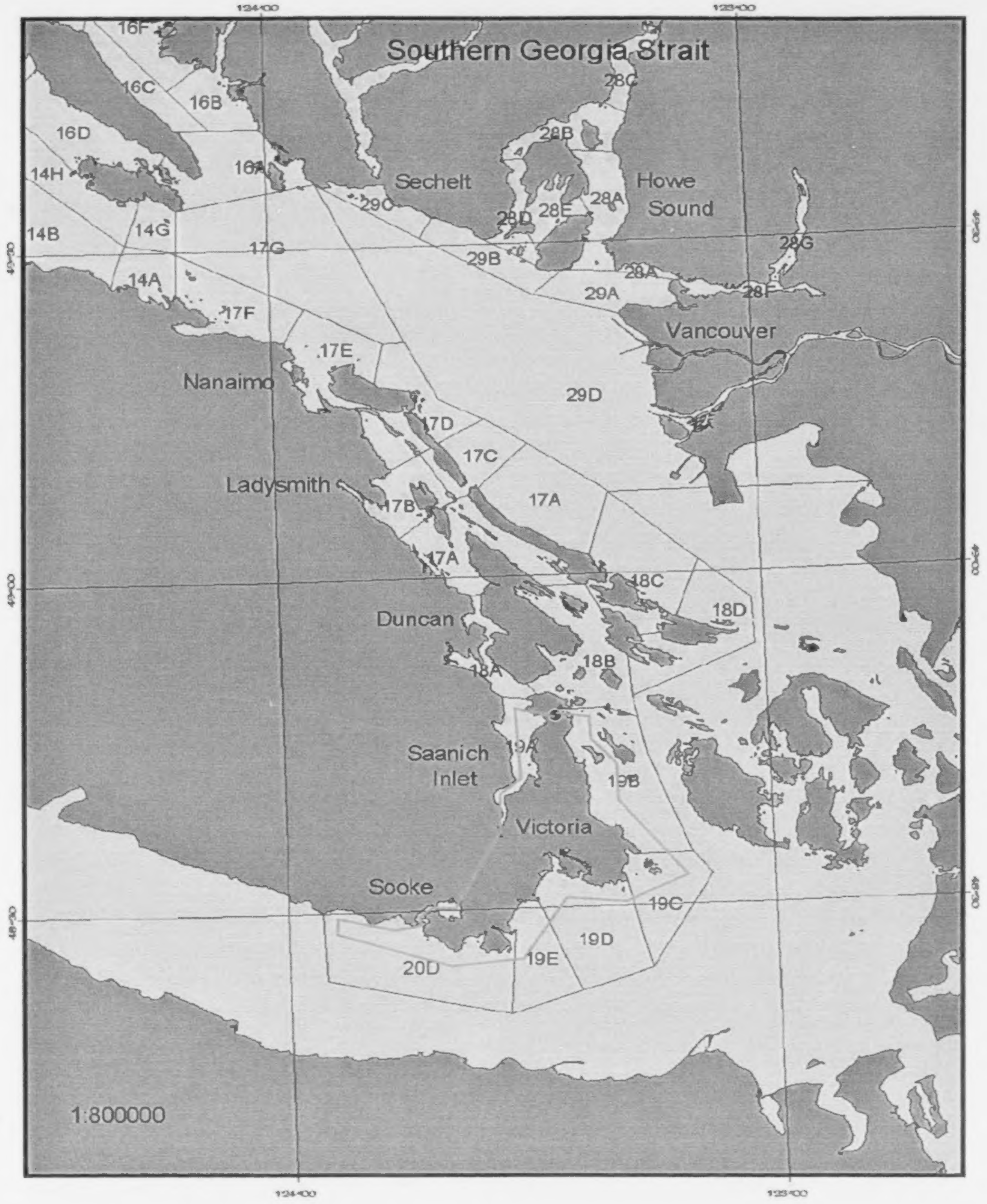

Southern Georgia Strait
16F
16C
16B
16D
14H
16A
14B
14G
17G
14A
17F
17E
Nanaimo
Sechelt
29C
28C
28B
28A
28D
28E
Howe
Sound
28G
29B
28A
29A
28F
Vancouver
29D
17D
17C
Ladysmith
17B
17A
17A
18C
18D
Duncan
18A
18B
Saanich
Inlet
19A
19B
Victoria
Sooke
19C
19D
19E
20D
1:800000

Figure 3c. SC creel survey southern aerial survey winter route, 2009.

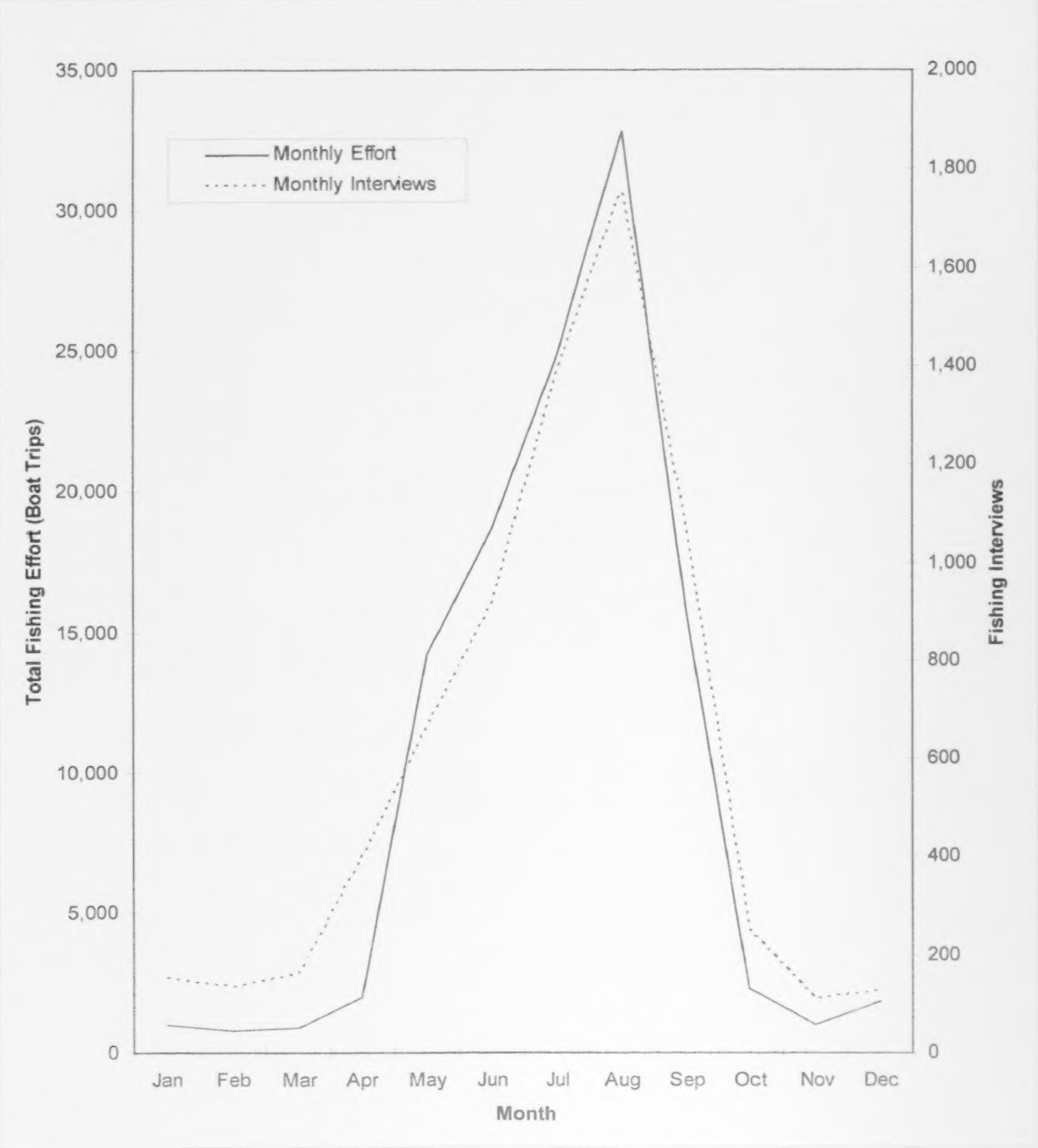


Figure 4. Comparison of monthly[1] total fishing effort in the SG and monthly[1] interviews in the SG creel survey, 2009.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

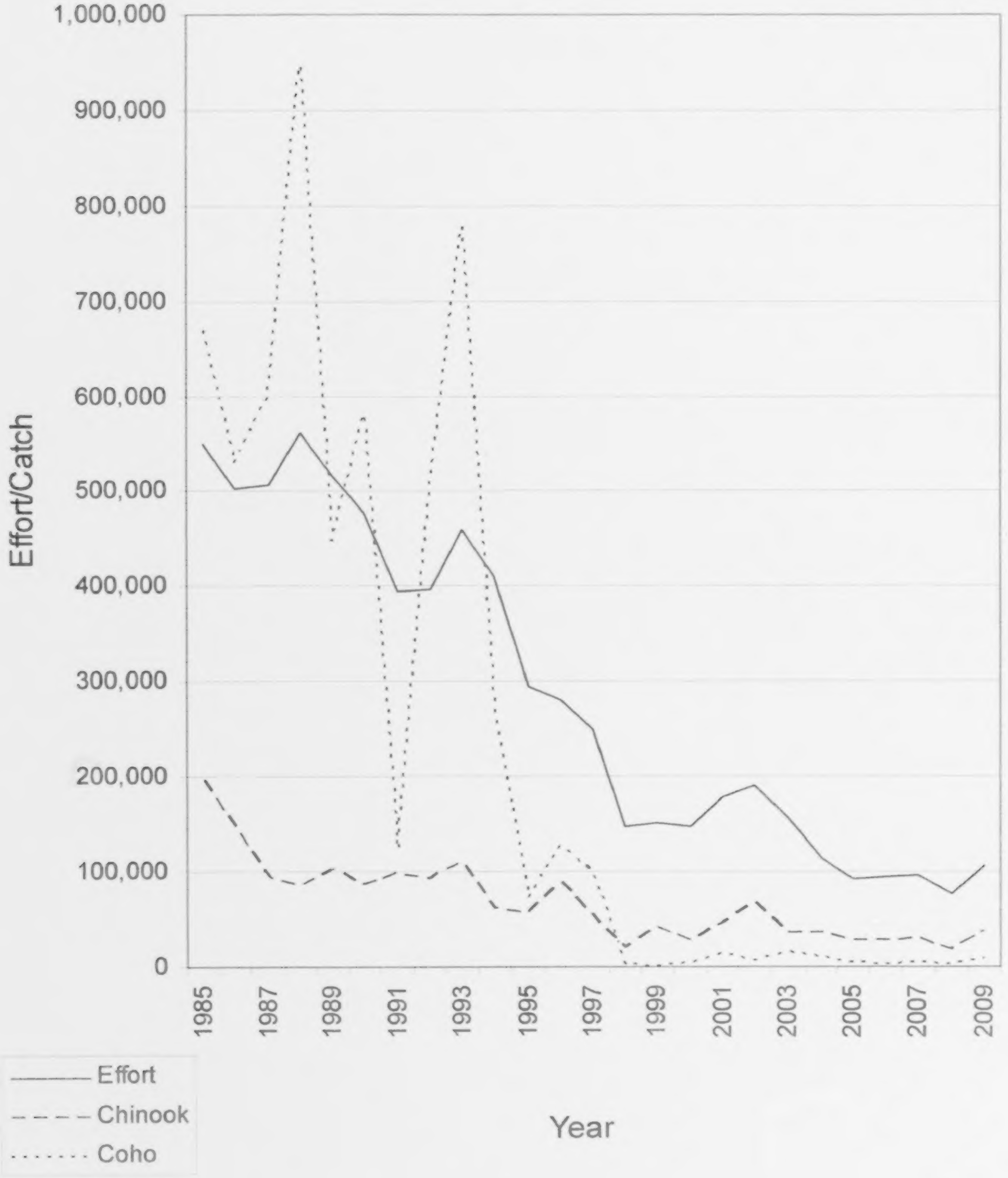


Figure 5. Effort (boat trips) statistics and estimated kept catches[1] of chinook and coho salmon in the SG, 1985 to 2009.

[1] This figure uses estimate values from May to September inclusively for historical comparisons.

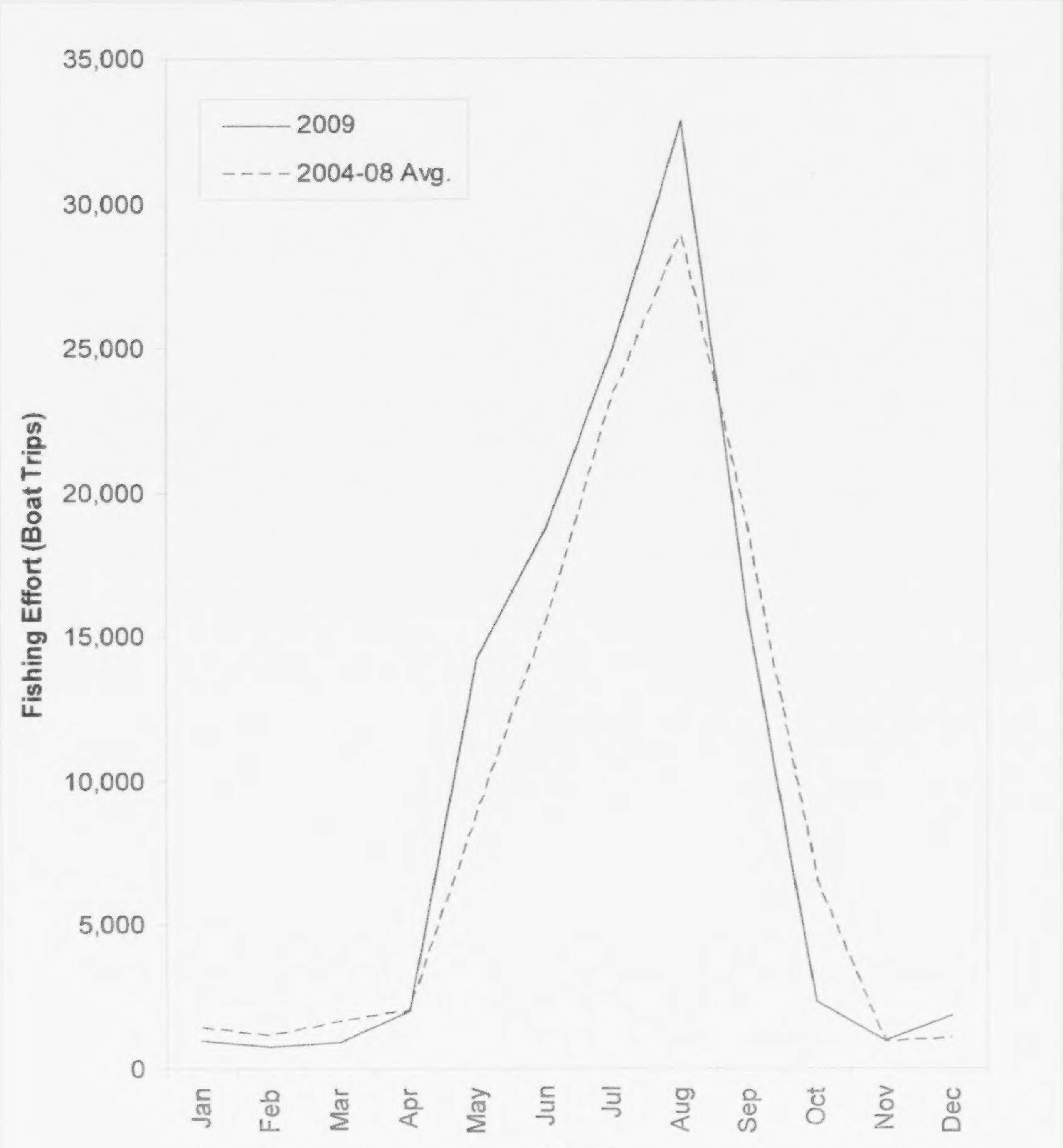


Figure 6. Monthly[1] fishing effort estimates (boat trips) in the SG during 2009 and the five-year average for 2004 to 2008.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

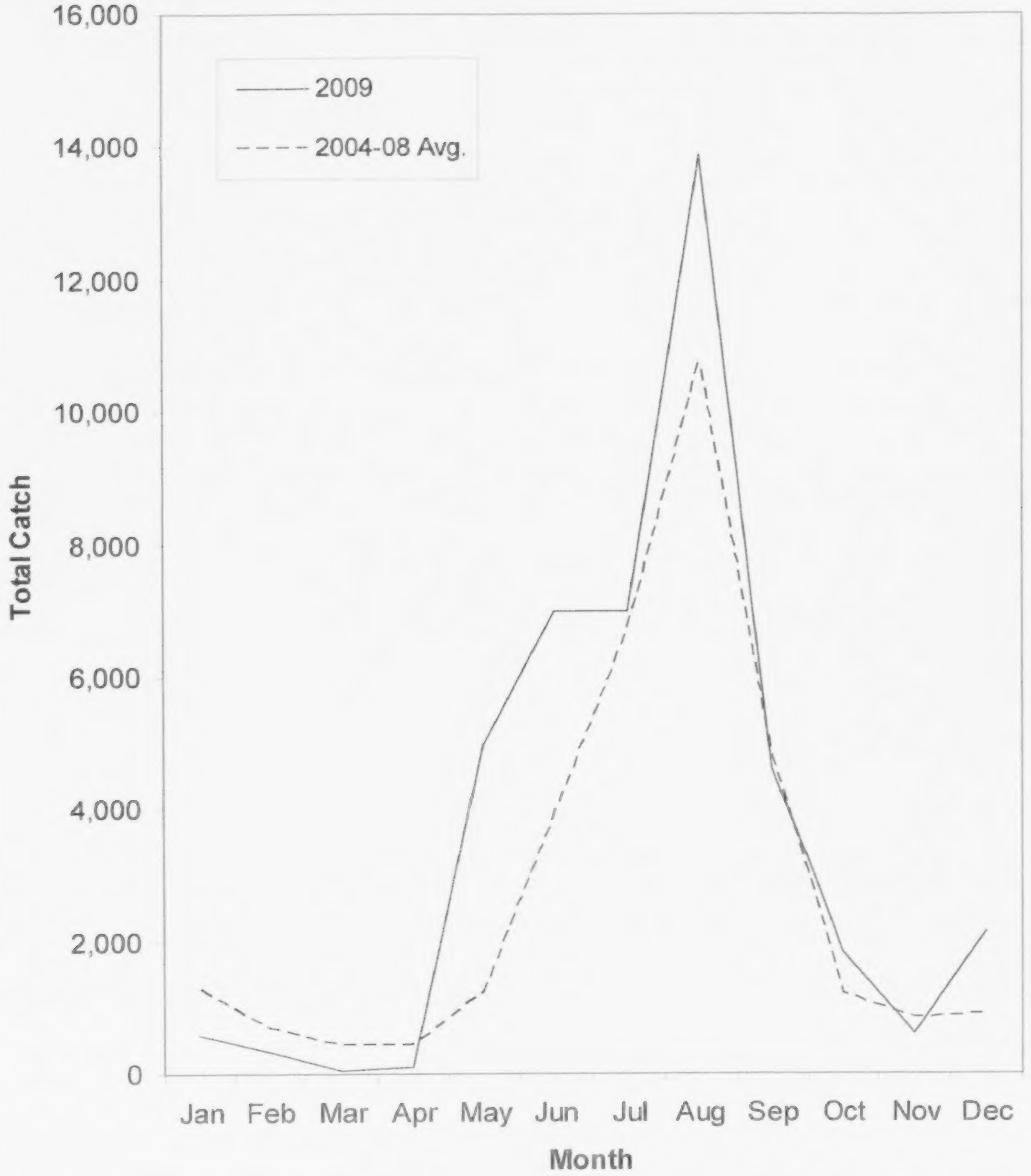


Figure 7. Monthly[1] chinook kept catches in the SG during 2009 and the five-year average for 2004 to 2008.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

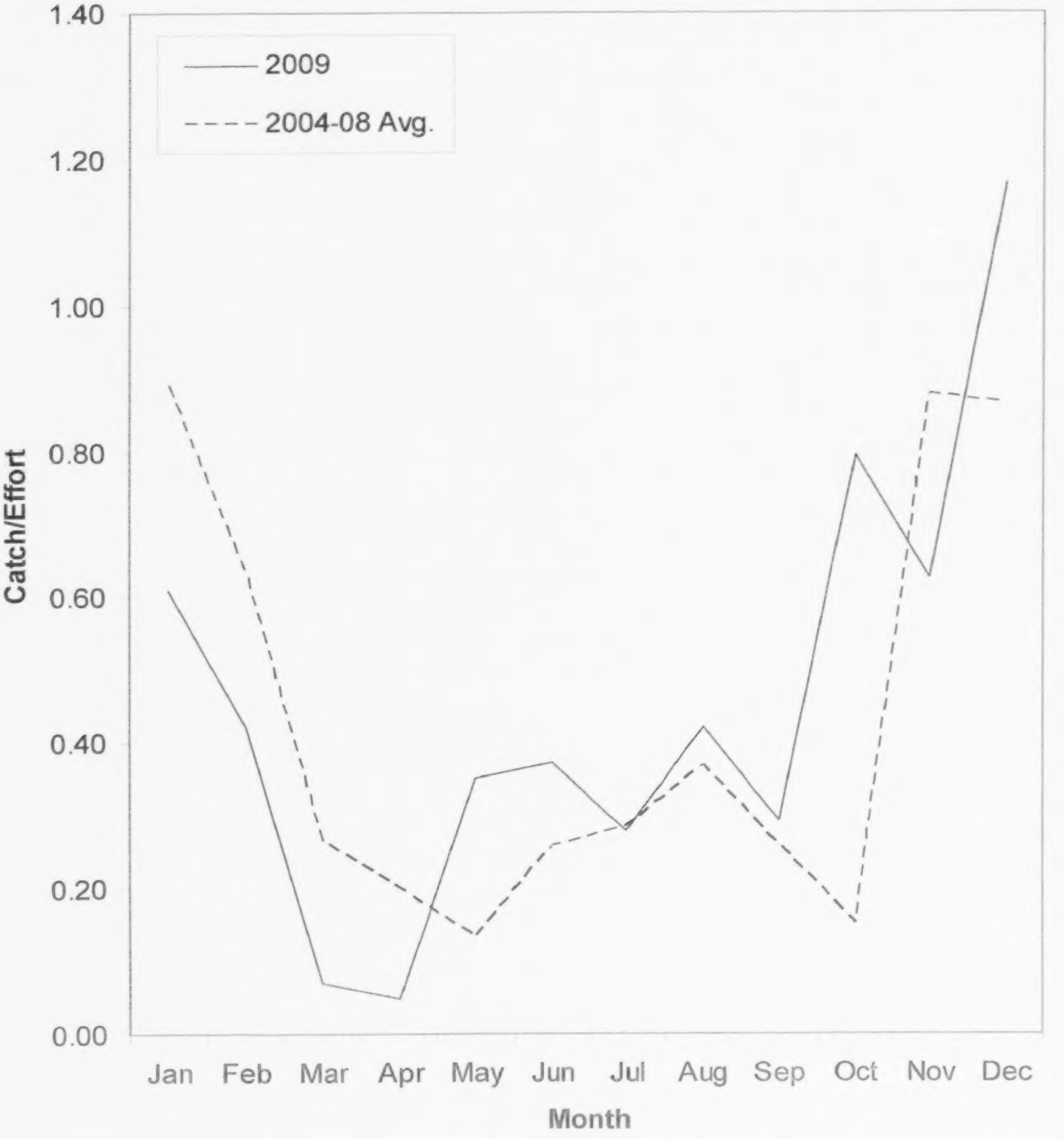
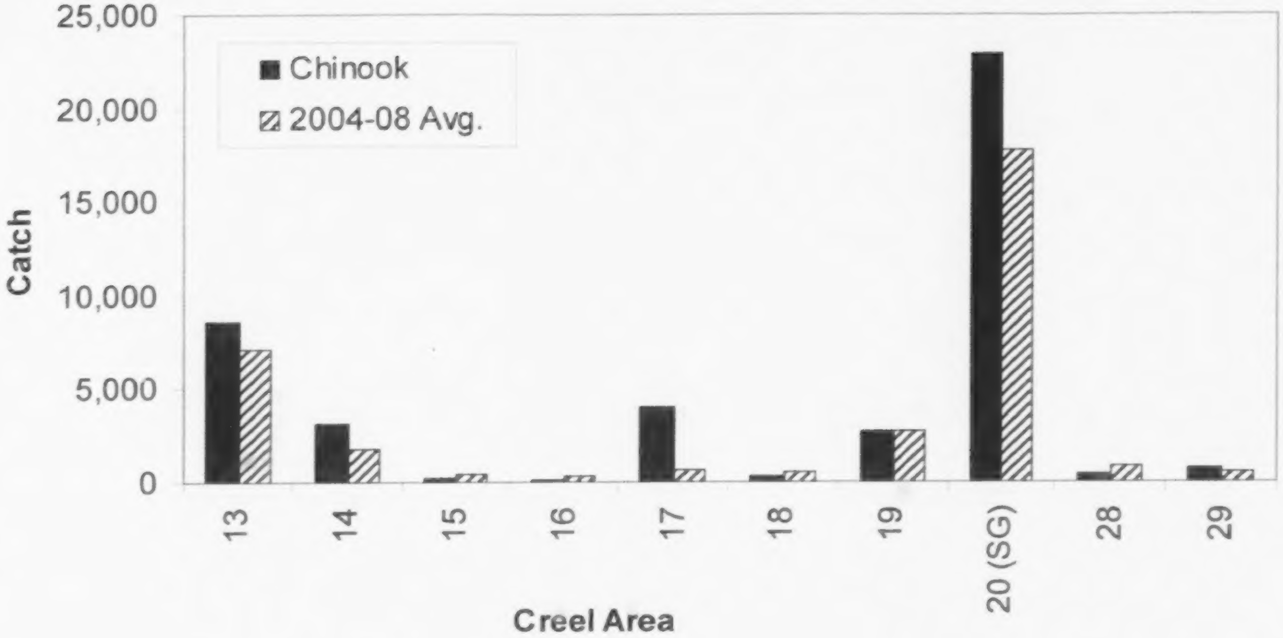


Figure 8. Monthly[1] chinook kept catch per boat trip in the SG during 2009 and the five-year average for 2004 to 2008.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.



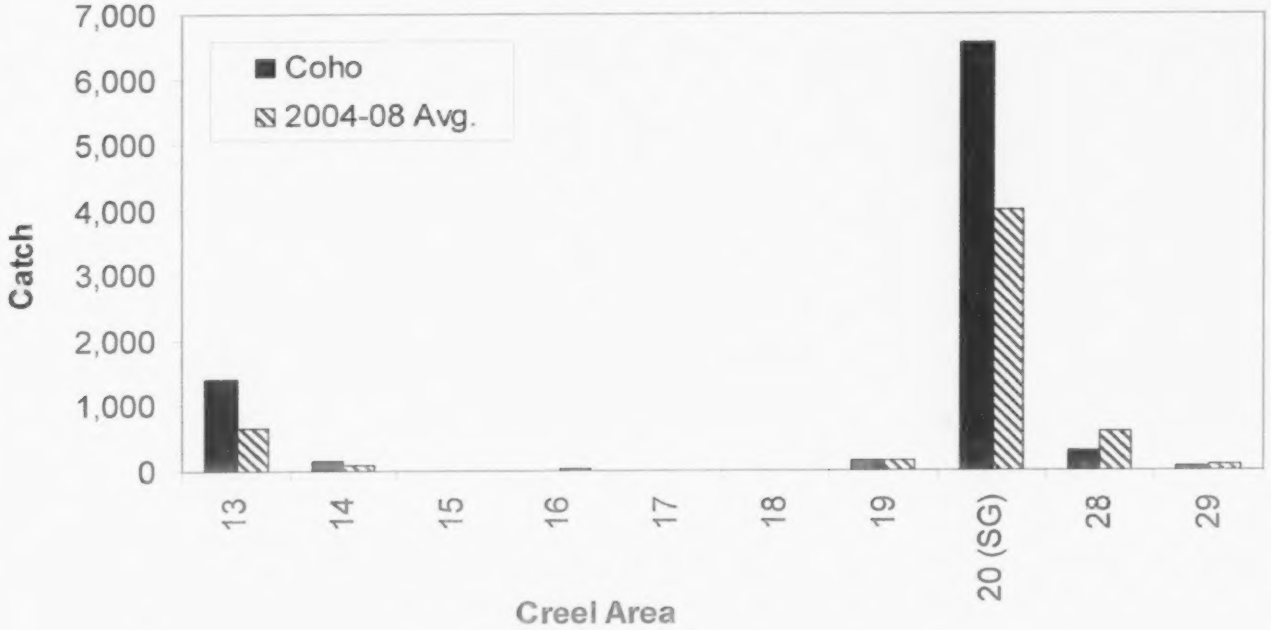


Figure 9. Annual estimated kept catches of chinook and coho salmon by creel area[1] in the SG during 2009 and the five-year average for 2004 to 2008.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

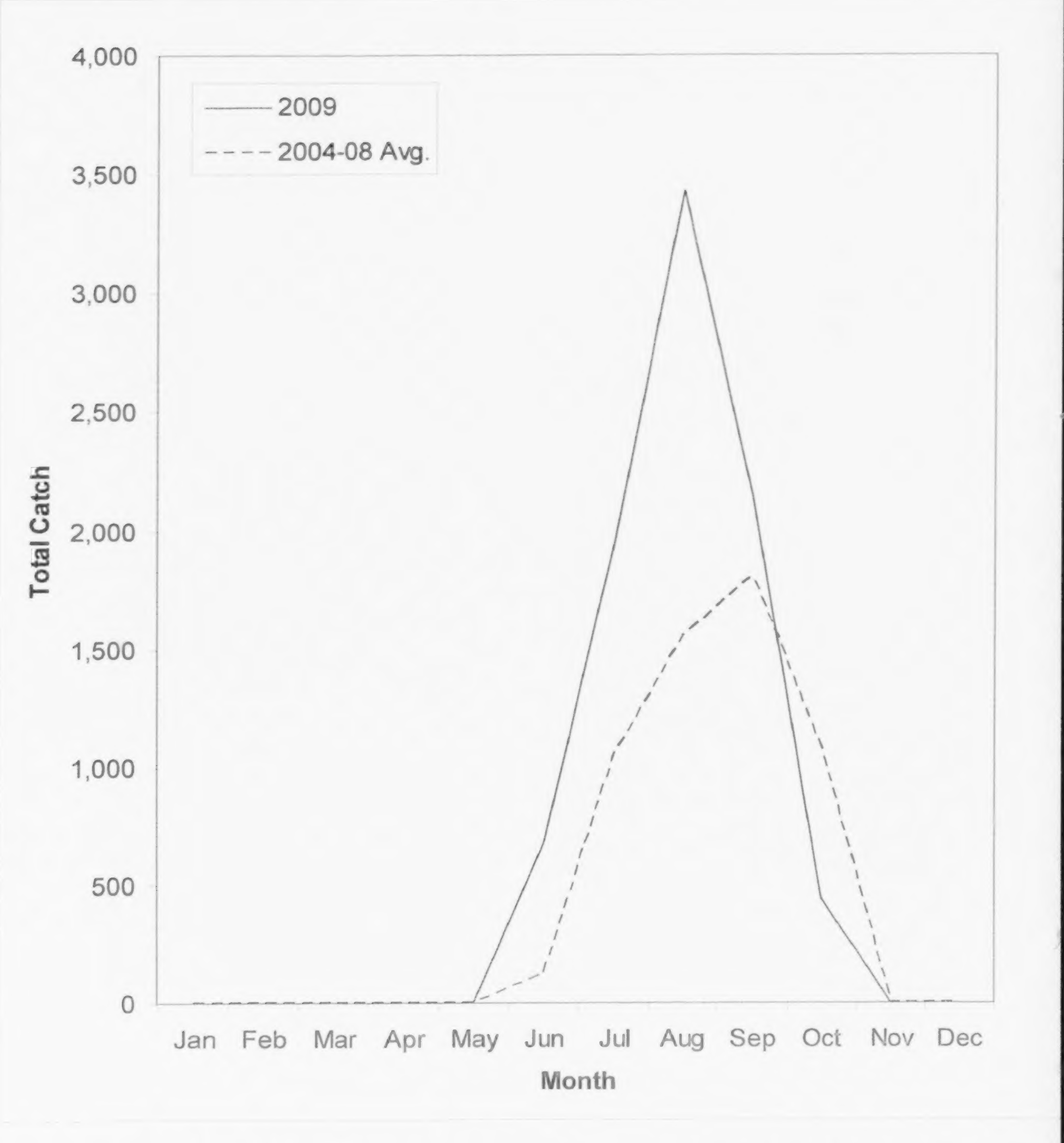


Figure 10. Monthly[1] estimated coho kept catches in the SG during 2009 and the five-year average for 2004 to 2008.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

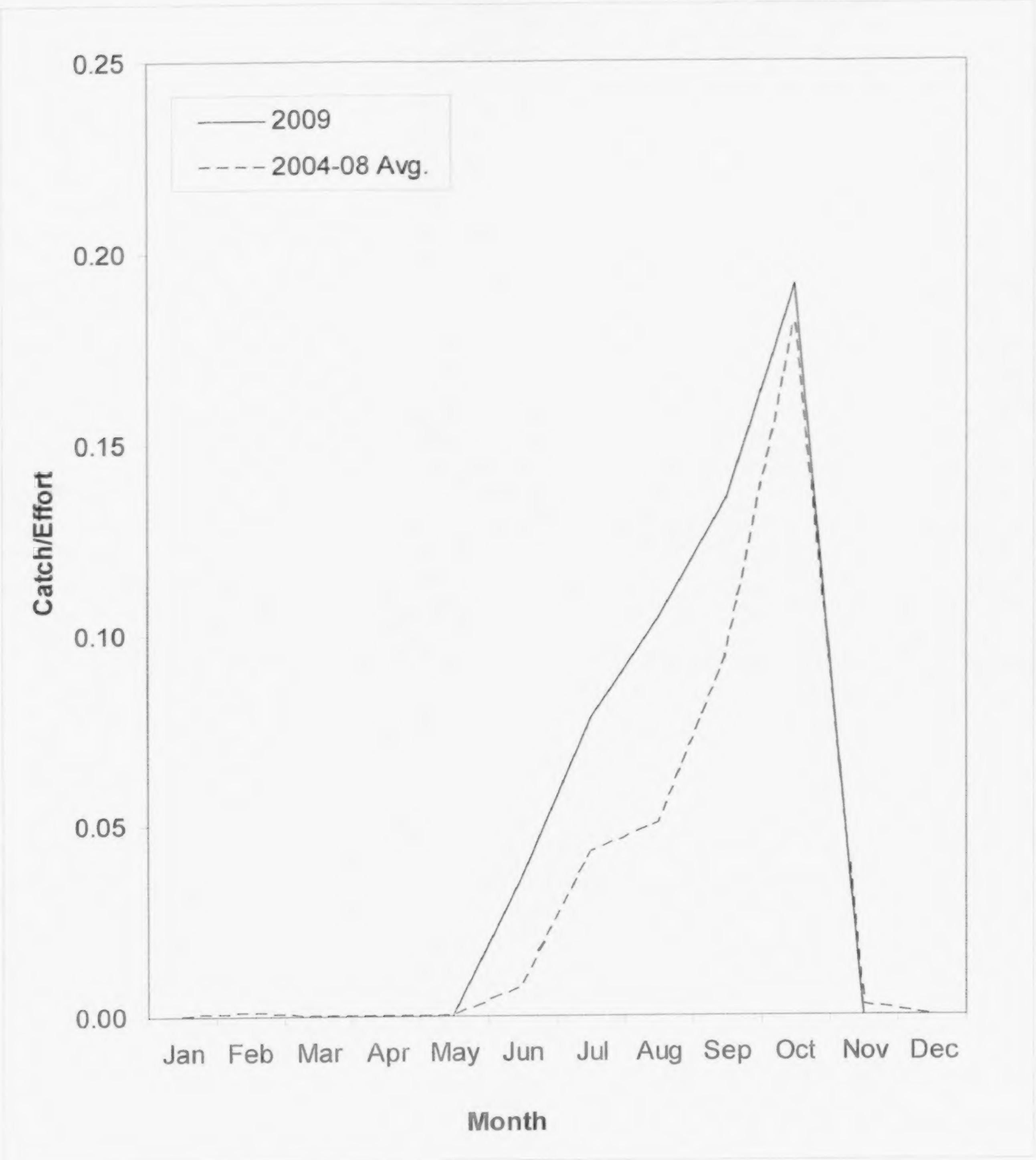


Figure 11. Monthly[1] estimated coho kept catch per boat trip in the SG during 2009 and the five-year average for 2004 to 2008.

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[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

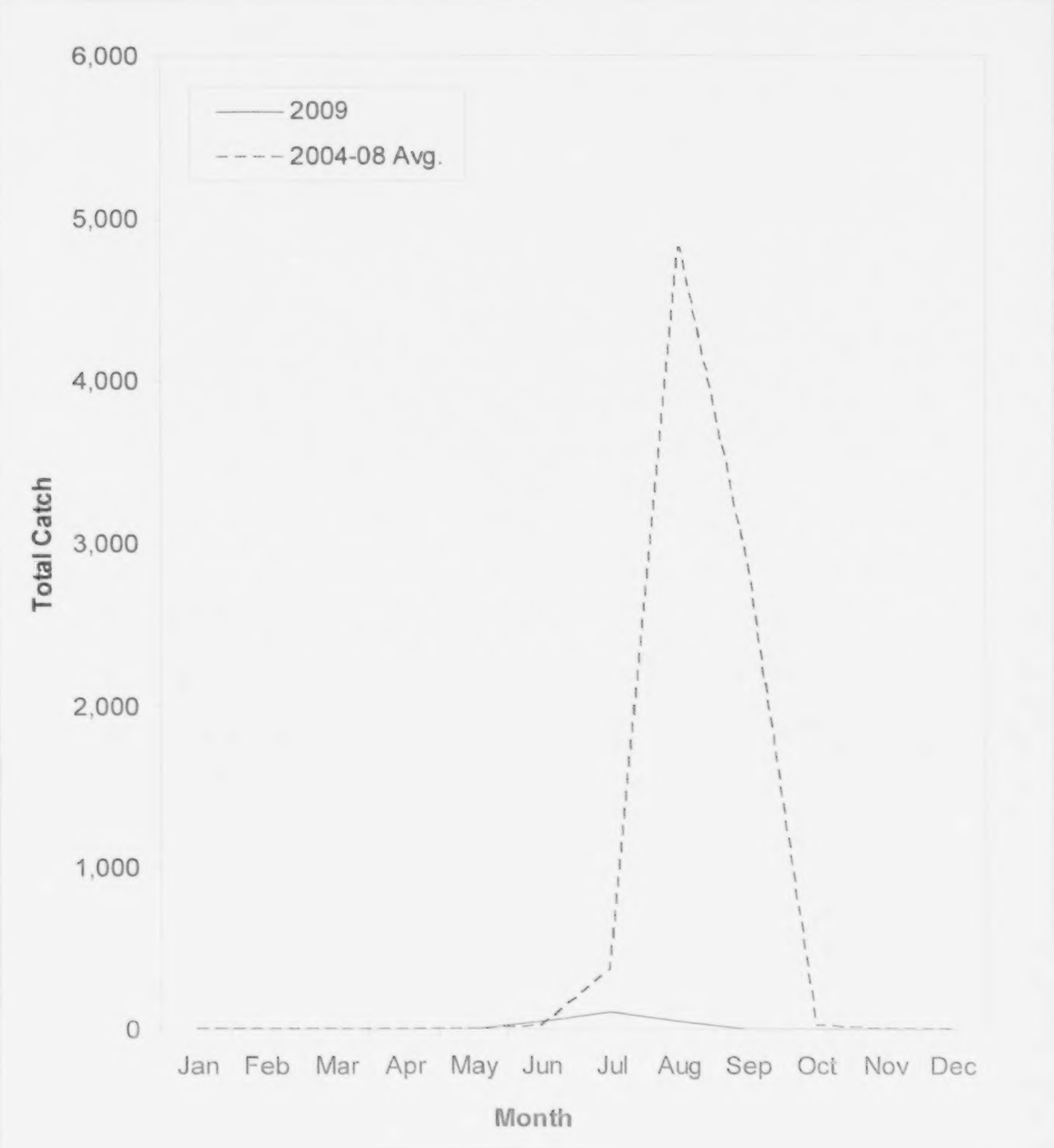


Figure 12. Monthly[1] estimated sockeye kept catches in the SG during 2009 and the five-year average for 2004 to 2008.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

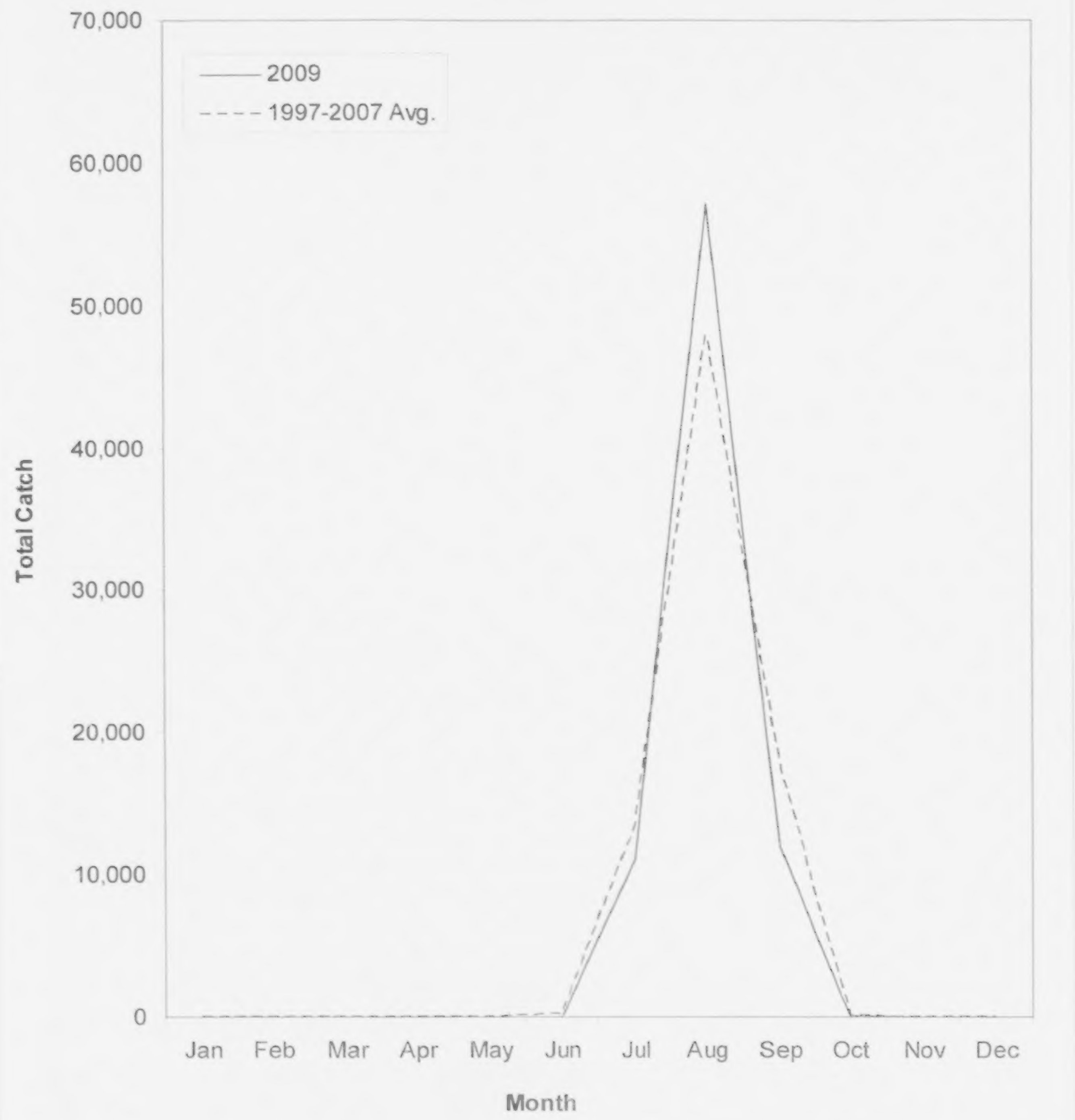


Figure 13. Monthly[1] estimated odd year pink kept catches in the SG during 2009 and the five-cycle average for 1999 to 2007.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

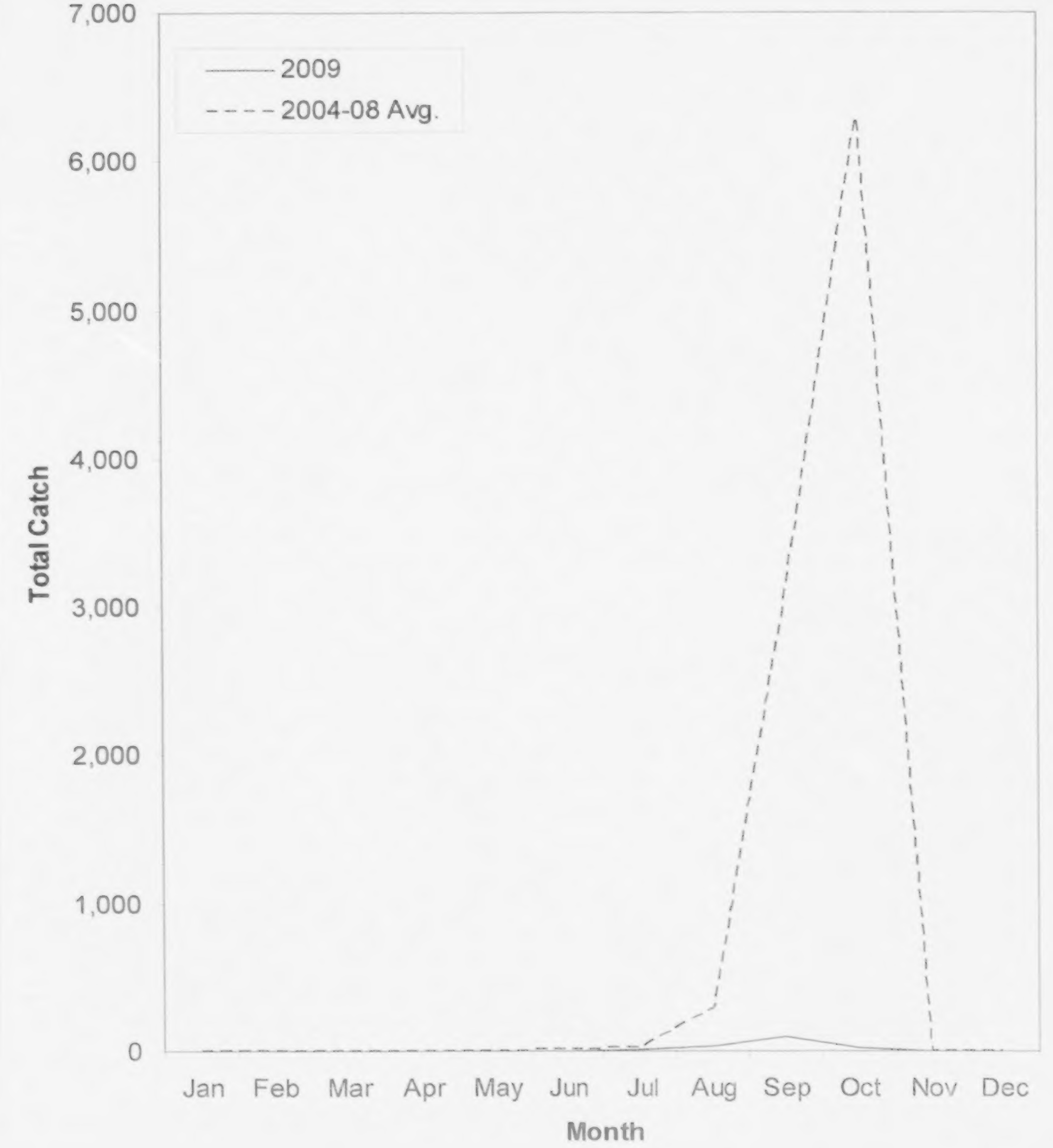
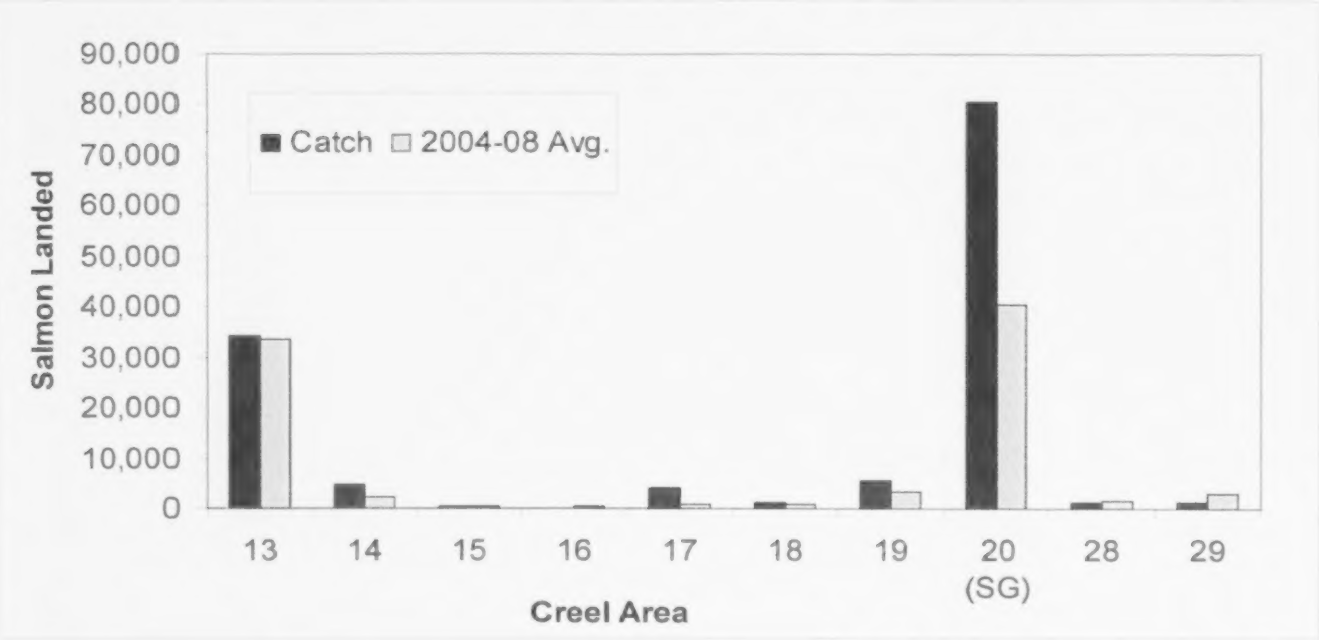


Figure 14. Monthly[1] estimated chum kept catches in the SG during 2009 and the five-year average for 2004 to 2008.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.



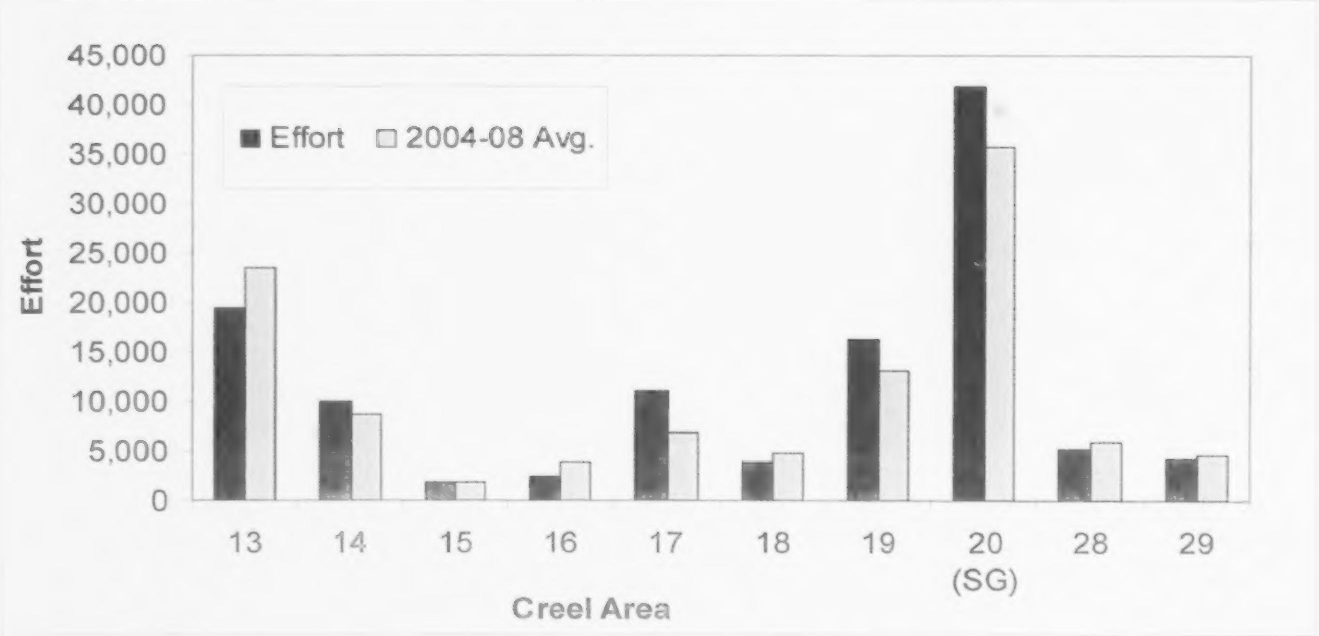


Figure 15. Total salmon landed and total fishing effort by creel area[1] in the SG during 2009 and the five-year average for 2004 to 2008.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

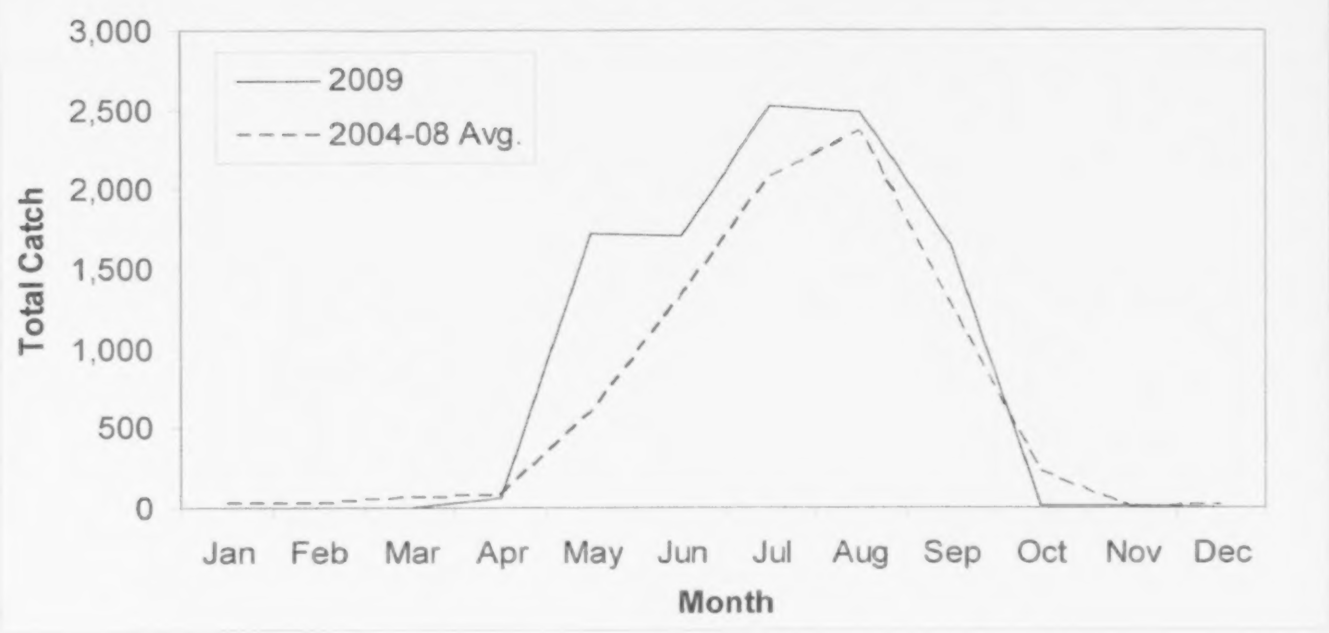


Figure 16. Monthly[1] estimated rockfish (all species) kept catches in the SG during 2009 and the five-year average for 2004 to 2008.

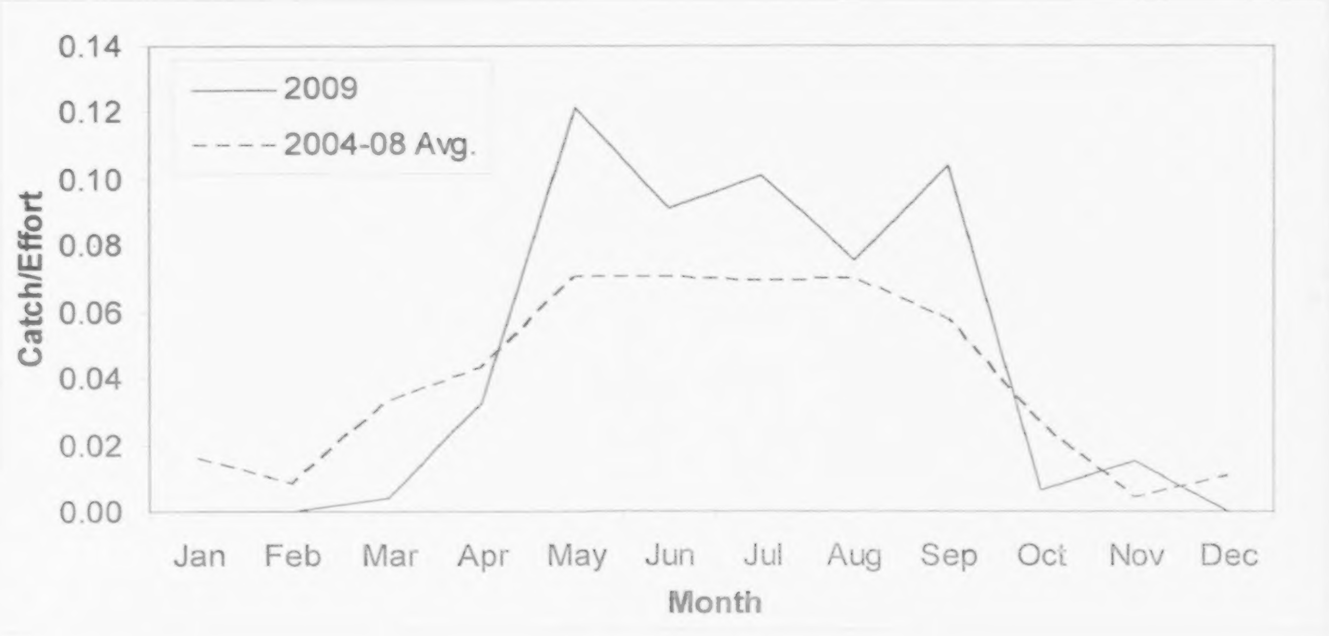


Figure 17. Monthly[1] estimated rockfish (all species) kept catch per boat trip in the SG during 2009 and the five-year average for 2004 to 2008.

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[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

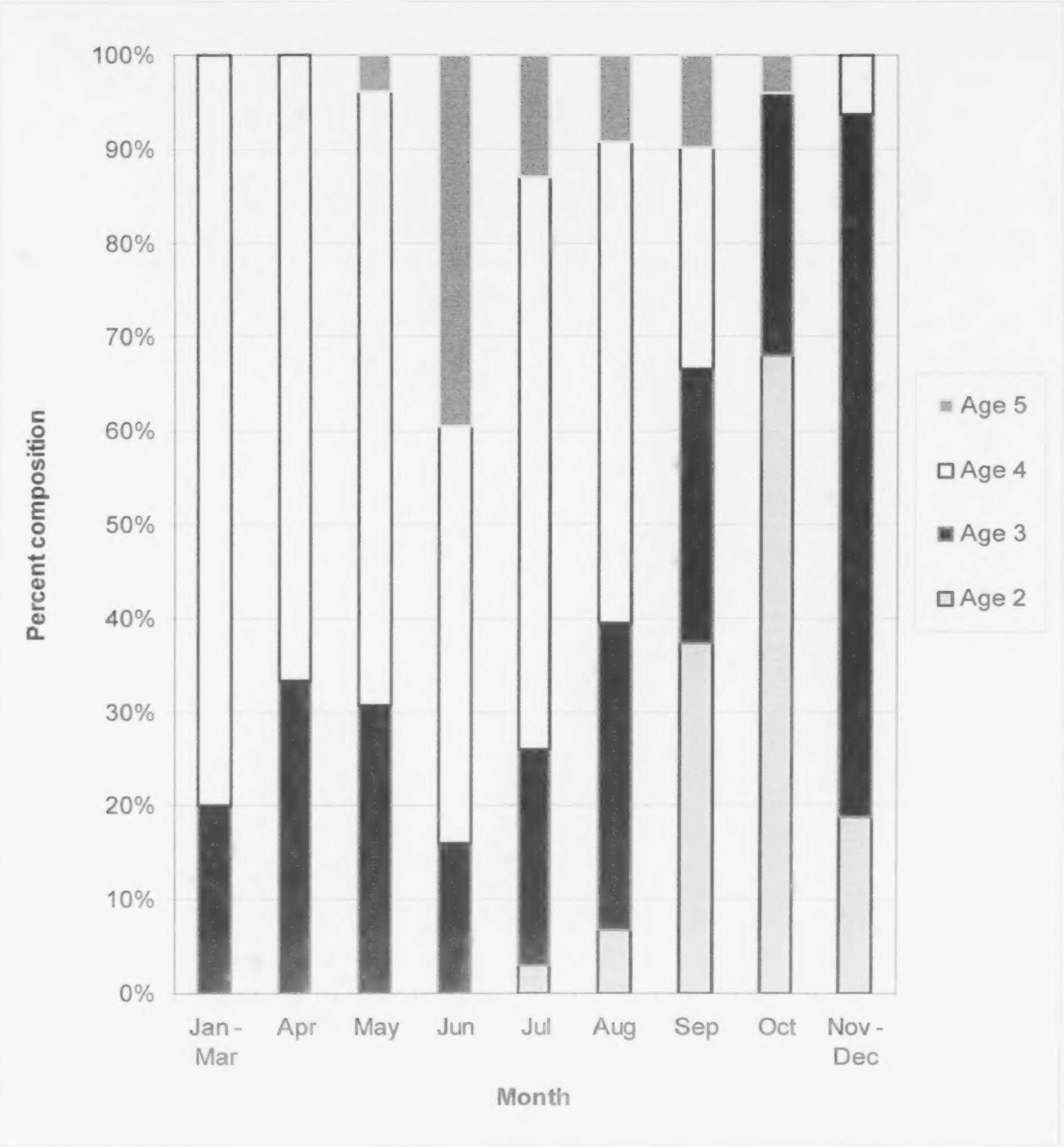

Figure 18. Monthly[1] percent age composition of chinook salmon sampled in the SG creel survey, 2009.

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

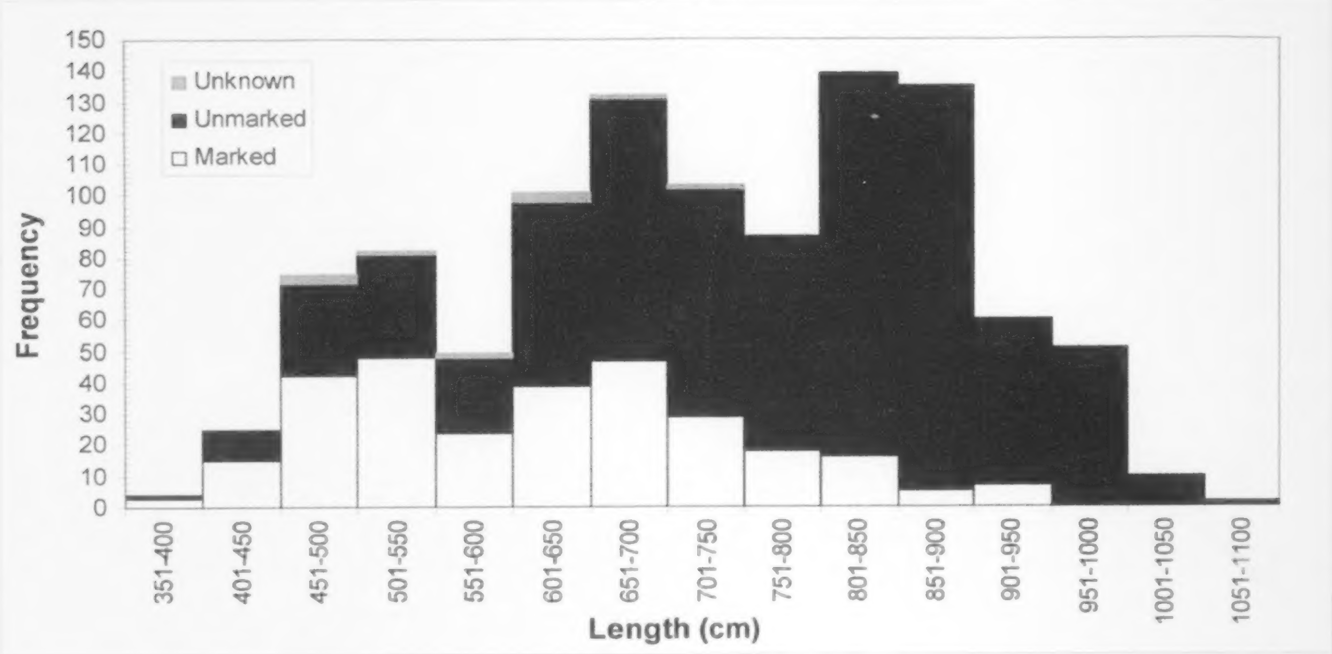

Figure 19. Length frequency distribution of chinook salmon sampled in the SG creel survey, 2009.

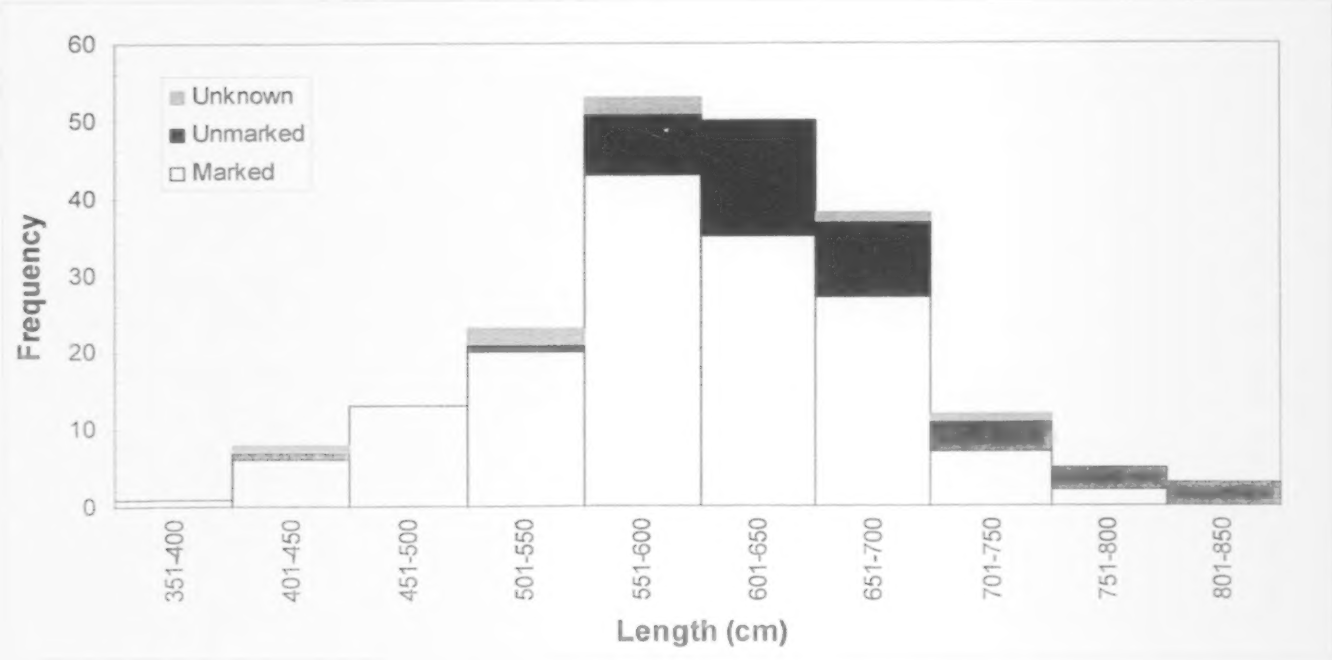

Figure 20. Length frequency distribution of coho salmon samplled in the SG creel survey, 2009.

APPENDICES

Appendix A. Previous SG and northern Vancouver Island creel survey reports.

Shardlow, T.F., English, K.K., Hoyt, T., Gillespie, G.E., and Calvin, T.A. 1989. Strait of Georgia Creel Survey sport fishery statistics, 1983. Can. Manuscr. Rep. Fish. Aquat. Sci. 1872: 53 p.

Shardlow, T.F., and Collicutt, L.D. 1989 a. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1984. Can. Manuscr. Rep. Fish. Aquat. Sci. 2032: 61 p.

Shardlow, T.F., and Collicutt, L.D. 1989 b. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1985. Can. Manuscr. Rep. Fish. Aquat. Sci. 2033: 60 p.

Shardlow, T.F., and Collicutt, L.D. 1989 c. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1986. Can. Manuscr. Rep. Fish. Aquat. Sci. 2034: 61 p.

Shardlow, T.F., and Collicutt, L.D. 1989 d. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1987. Can. Manuscr. Rep. Fish. Aquat. Sci. 2035: 62 p.

Shardlow, T.F., and Collicutt, L.D. 1989 e. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1988. Can. Manuscr. Rep. Fish. Aquat. Sci. 2036: 63 p.

Collicutt, L.D., and Shardlow, T.F. 1990. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1989. Can. Manuscr. Rep. Fish. Aquat. Sci. 2087: 75 p.

Collicutt, L.D., and Shardlow, T.F. 1992. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1990. Can. Manuscr. Rep. Fish. Aquat. Sci. 2109: 76 p.

Collicutt, L.D., and Shardlow, T.F. 1995. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1991. Can. Manuscr. Rep. Fish. Aquat. Sci. 2137: 75 p.

Collicutt, L.D., Naito, B.G., Ryall, P., and Lapi, L. 1992. Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 1991. Can. Tech. Rep. Fish. Aquat. Sci. 1857: 121 p.

Collicutt, L. D., and Shardlow, T.F. 1994. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1992. Can. Manuscr. Rep. Fish. Aquat. Sci. 2221: 75 p.

Collicutt, L.D., Shardlow, T.F., Smith, B.D., and Gillespie, G.E. 1994. Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 1992. Can. Tech. Rep. Fish. Aquat. Sci. 1973: 53 p.

Collicutt, L.D., Shardlow, T.F., Smith, B.D., and Gillespie, G.E. 1994. Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 1993. Can. Manuscr. Rep. Fish. Aquat. Sci. 1974: 53 p.

Hardie, D.C., Nagtegaal, D.A., and Nagy, L. 1999. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 1998. Can. Manuscr. Rep. Fish. Aquat. Sci. 2500: 92 p.

Hardie, D.C., Nagtegaal, D.A., and Nagy, L. 2001. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 1999. Can. Manuscr. Rep. Fish. Aquat. Sci. 2553: 111 p.

Hardie, D.C., Nagtegaal, D.A., Hein, K., and Sturhahn, J. 2002. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 2000. Can. Manuscr. Rep. Fish. Aquat. Sci. 2608: 112 p.

Hardie, D.C., Nagtegaal, D.A., Hein, K., and Sturhahn, J. 2003. Strait of Georgia and Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 2001. Can. Manuscr. Rep. Fish. Aquat. Sci. 2640: 107 p.

Zetterberg, P.R., Maher, J.M., and Watson, N.M. 2009. Strait of Georgia recreational fishery creel survey finfish data, 2002 to 2006. Can. Data Rep. Fish. Aquat. Sci. 1212: xix + 299 p.

Carter, E.W., and Zetterberg, P.R. 2010. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 2007. Can. Manuscr. Rep. Fish. Aquat. Sci. 2914: xiii + 125 p.

Zetterberg, P.R., and Carter, E.W. 2010. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 2008. Can. Manuscr. Rep. Fish. Aquat. Sci. 2929: xiv + 123 p.

Appendix B. Strait of Georgia creel (SG) survey study area.

The 'Areas' delineated within the SG creel survey are the same as those statistical areas used previous to the current creel areas. The description of the area boundaries are those stated as salmon purse-seine fishing areas (Shardlow 1985). Catch and effort estimates were produced for creel areas 13 through 19, 20(SG), 28, and 29 and these areas are further divided for the purpose of the creel survey into creel sub-areas (Figure 3 a, b and c). Sub-areas being delineated by observed sport fishing patterns and concentrations.

The SG creel survey study area and landing site locations used in 2009 are shown in Figure 1. The study area for which these statistics apply includes those waters of JDF Strait and the SG bounded in the south by a line from Sheringham Pt. on Vancouver Island due south to an intersection with the International Boundary and along the International Boundary to the B.C. Mainland coast at Blaine (Boundary Bay) and in the northern by the following boundary lines:

1. A line in Johnstone Strait from Rock Point just west of Rock Bay to a point approximately 1 km west of the western-most point of Turn Island.
2. Includes the waters of Nodales Channel south of East Thurlow Island bound by a line from Johns Point on East Thurlow Island to Owen Point on the mainland coast.
3. Bute Inlet below a line from Lawrence Point across the inlet. This coincides with the intersection of creel areas 13-21 and 13-22.
4. A line from Raza Point on Raza Island northwest to the mainland coast off Calm Channel.
5. A line from the southern-most point of Raza Island to the western-most point of West Redonda Island.
6. A line from the eastern-most point of West Redonda Island from Marylebone Point to Horace Head on East Redonda Island.
7. Desolation Sound bound by a line from the southern-most point of East Redonda Island to Price Point on the mainland coast.
8. A line from Zephine Head on Gifford Peninsula south of Desolation Sound to Sarah Point on the Malaspina Peninsula.
9. A line from Elephant Point on the mainland coast northeast of Saint Vincent Bay to intersect with the peak of Mount Foley approximately 1.5 km south southwest of Lapan Creek.
10. A line starting at a point approximately 2.5 km north of Dacres Point on the mainland coast to a point approximately 1 km north of Treat Creek.
11. A line that coincides with the intersection of creel areas 16-9 and 16-11 from Egmont Point on the mainland coast to the Sechelt Peninsula.
12. A line that coincides with the intersection of the boundaries of creel areas 28-1 and 28-3 in Howe Sound.
13. A line from the southern-most point of Halkett Point on Gambier Island due east till it intersects with the mainland coast at Lions Bay.
14. A line directly under the Lions Gate Bridge from Prospect Point northeast to the West Vancouver shoreline.

Appendix C-1. Effort by month[1] and creel area in the SG, 2009.

Month	Creel Area																				Est Total	SE Total
	13		14		15		16		17		18		19		20 (SG)		28		29			
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	468	185	500	75	-	-	-	-	968	200
Feb	-	-	-	-	-	-	-	-	-	-	-	-	387	138	393	203	-	-	-	-	780	245
Mar	-	-	-	-	-	-	-	-	-	-	-	-	718	222	185	61	-	-	-	-	904	230
Apr	-	-	-	-	-	-	-	-	-	-	-	-	1570	358	419	105	-	-	-	-	1990	373
May	1052	218	1638	433	275	61	196	42	3619	737	812	217	3236	655	2514	668	536	75	307	129	14185	1315
Jun	2989	492	1934	372	357	103	161	43	1499	297	607	85	1729	197	8040	2103	845	98	580	250	18742	2241
Jul	5664	444	2097	249	797	116	801	93	1923	280	1016	66	1797	163	8494	2222	1615	127	697	101	24902	2314
Aug	7149	413	2713	314	385	61	858	115	3292	523	682	92	2494	214	12566	1539	960	83	1718	188	32818	1739
Sep	2559	318	1588	257	93	28	403	59	801	113	701	103	1614	204	5847	766	1147	241	1035	180	15788	956
Oct	-	-	-	-	-	-	-	-	-	-	-	-	866	144	1437	416	-	-	-	-	2302	440
Nov	-	-	-	-	-	-	-	-	-	-	-	-	491	113	506	182	-	-	-	-	997	214
Dec	-	-	-	-	-	-	-	-	-	-	-	-	900	334	938	288	-	-	-	-	1839	441
Total	19413	871	9970	743	1907	180	2420	170	11134	998	3818	279	16270	979	41842	3621	5103	311	4337	396	116215	4095

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[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-2. Chinook kept by month[1] and creel area in the SG, 2009.

	Creel Area																					
Month	13		14		15		16		17		18		19		20 (SG)		28		29		Est Total	SE Total
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	158	51	432	138	-	-	-	-	590	147
Feb	-	-	-	-	-	-	-	-	-	-	-	-	165	48	163	70	-	-	-	-	328	85
Mar	-	-	-	-	-	-	-	-	-	-	-	-	48	19	14	13	-	-	-	-	62	23
Apr	-	-	-	-	-	-	-	-	-	-	-	-	34	11	62	31	-	-	-	-	96	33
May	86	50	556	271	74	30	20	10	3614	1348	54	34	135	60	177	65	134	63	125	98	4975	1385
Jun	932	208	947	331	14	7	18	2	144	67	135	42	380	111	4365	909	0	0	59	51	6995	1000
Jul	2860	374	442	121	44	26	31	10	190	75	29	13	269	56	3016	478	66	37	41	20	6987	628
Aug	4516	709	807	155	42	15	58	30	33	17	60	30	589	84	7404	659	26	15	337	121	13873	993
Sep	236	64	347	146	20	10	30	14	25	16	28	26	195	55	3381	417	210	84	158	80	4629	466
Oct	-	-	-	-	-	-	-	-	-	-	-	-	203	125	1629	409	-	-	-	-	1831	428
Nov	-	-	-	-	-	-	-	-	-	-	-	-	12	9	612	213	-	-	-	-	624	213
Dec	-	-	-	-	-	-	-	-	-	-	-	-	522	193	1623	416	-	-	-	-	2145	458
Total	8630	832	3100	493	195	44	156	36	4006	1352	307	68	2711	296	22876	1442	436	113	720	184	43137	2233

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-3. Legal chinook released by month[1] and creel area in the SG, 2009.

	Creel Area																					
Month	13		14		15		16		17		18		19		20 (SG)		28		29		Est Total	SE Total
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	12	12	-	-	-	-	12	12
Feb	-	-	-	-	-	-	-	-	-	-	-	-	3	3	0	0	-	-	-	-	3	3
Mar	-	-	-	-	-	-	-	-	-	-	-	-	0	0	3	0	-	-	-	-	3	0
Apr	-	-	-	-	-	-	-	-	-	-	-	-	9	6	1	0	-	-	-	-	10	6
May	9	8	184	189	0	0	5	0	3210	1494	0	0	6	6	107	73	0	0	2	0	3522	1508
Jun	55	52	1	0	0	0	7	1	1	0	0	0	18	19	371	251	0	0	8	0	462	257
Jul	0	0	0	0	0	0	9	0	12	10	28	17	14	14	575	193	0	0	0	0	637	195
Aug	80	39	50	26	0	0	2	0	83	78	0	0	9	8	494	175	0	0	0	0	718	198
Sep	0	0	143	130	0	0	0	0	11	14	38	23	12	13	223	102	0	0	0	0	428	168
Oct	-	-	-	-	-	-	-	-	-	-	-	-	22	28	203	91	-	-	-	-	225	95
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	186	94	-	-	-	-	186	94
Dec	-	-	-	-	-	-	-	-	-	-	-	-	132	85	1336	640	-	-	-	-	1468	646
Total	145	66	378	231	0	0	23	1	3317	1496	66	28	225	94	3510	758	0	0	10	0	7674	1697

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-4. Sub-legal chinook released by month[1] and creel area in the SG, 2009.

Month	Creel Area																				Est Total	SE Total
	13		14		15		16		17		18		19		20 (SG)		28		29			
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	73	39	93	45	-	-	-	-	166	59
Feb	-	-	-	-	-	-	-	-	-	-	-	-	20	8	22	16	-	-	-	-	42	18
Mar	-	-	-	-	-	-	-	-	-	-	-	-	19	23	0	0	-	-	-	-	19	23
Apr	-	-	-	-	-	-	-	-	-	-	-	-	9	8	15	12	-	-	-	-	24	15
May	163	80	938	418	27	20	3	3	532	195	0	0	0	0	268	174	125	84	166	195	2222	543
Jun	1493	370	582	243	40	25	5	4	228	102	5	4	31	27	1430	391	33	23	329	245	4176	649
Jul	2280	333	341	95	169	63	126	46	494	165	128	49	132	46	3066	935	16	16	336	139	7088	1026
Aug	1901	1158	711	172	82	32	70	34	1196	486	94	51	925	185	12134	1793	199	127	1167	423	18480	2248
Sep	189	59	865	319	41	25	88	40	372	145	180	79	769	229	13133	2231	311	120	518	135	16469	2280
Oct	-	-	-	-	-	-	-	-	-	-	-	-	531	261	5206	1764	-	-	-	-	5737	1783
Nov	-	-	-	-	-	-	-	-	-	-	-	-	147	105	547	247	-	-	-	-	694	268
Dec	-	-	-	-	-	-	-	-	-	-	-	-	181	103	1680	739	-	-	-	-	1861	746
Total	6027	1264	3438	611	359	81	291	70	2823	577	407	106	2837	426	37595	3602	684	196	2517	561	56979	3979

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-5. Clipped adipose (CA) and unclipped adipose (UA) coho[1] kept and released by month[3], effort, and mark type in the SG, 2009.

Month	Effort	SE	Coho CA Kept	SE	Coho UA Kept	SE	Coho Un-known Kept	SE	Monthly Coho Kept	Monthly Coho Kept SE	Coho CA Rel[2]	SE	Coho UA Rel[2]	SE	Coho Un-known Rel[2]	SE	Monthly Coho Rel[2]	Monthly Coho Rel[2] SE
Jan	968	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feb	780	245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mar	904	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr	1990	373	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May	14185	1315	0	0	0	0	0	0	0	0	0	0	29	26	11	12	39	29
Jun	18742	2241	410	171	223	172	45	52	678	248	0	0	821	359	1234	551	2054	657
Jul	24902	2314	1847	496	90	57	0	0	1936	499	52	30	6521	1594	996	340	7569	1630
Aug	32818	1739	2511	392	887	255	30	33	3429	469	76	33	14347	2013	1348	254	15770	2030
Sep	15788	956	1805	271	334	105	0	0	2139	291	55	30	7544	1037	1484	383	9083	1106
Oct	2302	440	80	42	362	137	0	0	442	144	0	0	48	34	5	6	53	35
Nov	997	214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dec	1839	441	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	116215	4095	6653	710	1895	358	75	61	8623	797	182	54	29309	2793	5078	794	34569	2904

[1] 1354 unidentified salmon were kept, and 34,016 unidentified salmon were released in SG in 2009 and were not included.

[2] Rel = Released.

[3] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-6. Clipped adipose (CA) and unclipped adipose (UA) coho[1] kept and released by creel area[3], effort, and species in the SG, 2009.

Creel Area	Effort	SE	Coho CA Kept	SE	Coho UA Kept	SE	Coho Un-known Kept	SE	Area Coho Kept	Area Coho Kept SE	Coho CA Rel[2]	SE	Coho UA Rel[2]	SE	Coho Un-known Rel[2]	SE	Area Coho Rel[2]	Area Coho Rel[2] SE
13	19413	871	1035	282	378	224	0	0	1413	361	12	11	7957	1553	306	94	8275	1556
14	9970	743	78	69	66	68	0	0	145	96	0	0	634	249	732	243	1365	348
15	1907	180	0	0	0	0	0	0	0	0	0	0	3	3	0	0	3	3
16	2420	170	0	0	0	0	0	0	0	0	0	0	7	4	0	0	7	4
17	11134	998	0	0	0	0	0	0	0	0	23	13	78	34	238	83	339	91
18	3818	279	0	0	0	0	0	0	0	0	0	0	604	482	81	67	686	487
19	16270	979	113	34	33	20	0	0	146	40	0	0	613	148	313	163	926	220
20 (SG)	41842	3621	5067	642	1417	270	75	61	6559	699	109	46	19291	2251	2946	707	22346	2360
28	5103	311	308	75	0	0	0	0	308	75	27	19	88	38	246	79	362	90
29	4337	396	52	17	0	0	0	0	52	17	11	8	34	31	215	133	260	137
Total	116215	4095	6653	710	1895	358	75	61	8623	797	182	54	29309	2793	5078	794	34569	2904

[1] 1354 unidentified salmon were kept, and 34,016 unidentified salmon were released in SG in 2009 and were not included.

[2] Rel = Released.

[3] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-7. Clipped adipose (CA) and unclipped adipose (UA) chinook[1] kept and released by month[3], effort, and mark type in the SG, 2009.

Month	Effort	SE	Chinook CA Kept	SE	Chinook UA Kept	SE	Chinook Un-known Kept	SE	Monthly Chinook Kept	Monthly Chinook Kept SE	Chinook CA Rel[2]	SE	Chinook UA Rel[2]	SE	Chinook Un-known Rel[2]	SE	Monthly Chinook Rel[2]	Monthly Chinook Rel[2] SE
Jan	968	200	427	133	116	40	47	48	590	147	0	0	0	0	178	61	178	61
Feb	780	245	189	64	117	50	22	23	328	85	0	0	3	3	42	18	46	18
Mar	904	230	36	22	23	8	4	4	62	23	0	0	3	0	19	23	22	23
Apr	1990	373	75	32	21	9	0	0	96	33	4	0	0	0	29	16	33	16
May	14185	1315	320	105	4656	1381	0	0	4975	1385	9	0	238	100	5498	1599	5745	1602
Jun	18742	2241	1306	277	5526	958	163	70	6995	1000	21	0	124	73	4493	694	4638	698
Jul	24902	2314	1062	217	5866	588	59	46	6987	628	10	0	229	129	7486	1036	7726	1044
Aug	32818	1739	2944	427	10415	883	514	157	13873	993	43	40	288	103	18868	2254	19198	2257
Sep	15788	956	2072	332	2429	318	129	76	4629	466	36	37	313	158	16547	2280	16896	2286
Oct	2302	440	988	331	833	271	10	12	1831	428	0	0	39	0	5924	1785	5962	1785
Nov	997	214	396	185	167	84	61	64	624	213	0	0	0	0	880	284	880	284
Dec	1839	441	1346	366	729	270	70	54	2145	458	283	332	77	69	2968	927	3329	987
Total	116215	4095	11160	853	30898	2052	1078	218	43137	2233	406	336	1314	268	62933	4304	64654	4326

[1] 1354 unidentified salmon were kept, and 34,016 unidentified salmon were released in SG in 2009 and were not included.

[2] Rel = Released.

[3] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-8. Clipped adipose (CA) and unclipped adipose (UA) chinook[1] kept and released by creel area[3], effort, and species in the SG, 2009.

Creel Area	Effort	SE	Chinook CA Kept	SE	Chinook UA Kept	SE	Chinook Unknown Kept	SE	Area Chinook Kept	Area Chinook Kept SE	Chinook CA Rel[2]	SE	Chinook UA Rel[2]	SE	Chinook Unknown Rel[2]	SE	Area Chinook Rel[2]	Area Chinook Rel[2] SE
13	19413	871	467	153	8163	818	0	0	8630	832	6	0	139	66	6027	1264	6172	1266
14	9970	743	119	46	2895	487	85	66	3100	493	1	0	229	136	3586	639	3816	653
15	1907	180	25	11	170	43	0	0	195	44	0	0	0	0	359	81	359	81
16	2420	170	38	7	119	35	0	0	156	36	22	0	0	0	293	70	315	70
17	11134	998	156	89	3844	1349	6	7	4006	1352	3	0	181	100	5955	1600	6140	1603
18	3818	279	101	39	145	43	61	34	307	68	0	0	33	23	440	107	474	110
19	16270	979	1387	258	1270	138	55	45	2711	296	4	0	14	10	3045	437	3062	437
20 (SG)	41842	3621	8860	791	13144	1189	872	200	22876	1442	360	336	718	200	40027	3660	41106	3680
28	5103	311	0	0	436	113	0	0	436	113	0	0	0	0	684	196	684	196
29	4337	396	8	0	712	184	0	0	720	184	10	0	0	0	2517	561	2527	561
Total	116215	4095	11160	853	30898	2052	1078	218	43137	2233	406	336	1314	271	62933	4304	64654	4326

[1] 1354 unidentified salmon were kept, and 34,016 unidentified salmon were released in SG in 2009 and were not included.

[2] Rel = Released.

[3] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-9. Sockeye kept by month[1] and creel area in the SG, 2009.

	Creel Area																					
Month	13		14		15		16		17		18		19		20 (SG)		28		29		Est Total	SE Total
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Feb	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Mar	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Apr	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	52	0	0	0	0	45	52
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102	52	0	0	0	0	102	52
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	31	0	0	0	0	50	31
Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oct	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Dec	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	197	80	0	0	0	0	197	80

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-10. Sockeye released by month[1] and creel area in the SG, 2009.

	Creel Area																					
Month	13		14		15		16		17		18		19		20 (SG)		28		29		Est Total	SE Total
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Feb	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Mar	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Apr	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	15	0	0	0	0	15	15
Jul	422	244	0	0	0	0	0	0	0	0	0	0	8	8	477	242	0	0	0	0	907	343
Aug	439	195	0	0	0	0	0	0	0	0	0	0	27	25	550	176	5	4	157	89	1178	278
Sep	67	36	0	0	0	0	0	0	0	0	0	0	0	0	54	55	0	0	0	0	120	66
Oct	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Dec	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Total	928	314	0	0	0	0	0	0	0	0	0	0	35	26	1095	305	5	4	157	89	2220	447

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-11. Pink kept by month[1] and creel area in the SG, 2009.

Month	Creel Area																				Est Total	SE Total
	13		14		15		16		17		18		19		20 (SG)		28		29			
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Feb	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Mar	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Apr	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	15	0	0	0	0	15	15
Jul	1173	396	0	0	0	0	0	0	0	0	28	16	505	177	9321	2961	25	27	4	4	11056	2993
Aug	17740	2548	1322	263	0	0	0	0	9	10	634	165	1923	327	35136	5042	255	107	146	105	57165	5669
Sep	5354	787	8	7	0	0	0	0	0	0	116	46	243	87	6201	1017	23	16	15	11	11958	1290
Oct	-	-	-	-	-	-	-	-	-	-	-	-	0	0	77	62	-	-	-	-	77	62
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Dec	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Total	24266	2696	1330	263	0	0	0	0	9	10	777	172	2672	382	50749	5935	303	111	164	105	80272	6539

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[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-12. Pink released by month[1] and creel area in the SG, 2009.

Month	Creel Area																				Est Total	SE Total
	13		14		15		16		17		18		19		20 (SG)		28		29			
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Feb	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Mar	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Apr	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134	116	0	0	0	0	134	116
Jul	316	182	0	0	0	0	0	0	0	0	0	0	9	10	2655	892	0	0	0	0	2981	910
Aug	6718	2368	100	54	0	0	0	0	29	21	100	55	546	119	11465	2012	604	359	84	57	19646	3132
Sep	0	0	36	33	0	0	0	0	16	12	88	36	47	32	2299	715	47	49	12	13	2544	719
Oct	-	-	-	-	-	-	-	-	-	-	-	-	0	0	24	29	-	-	-	-	24	29
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Dec	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Total	7035	2375	136	63	0	0	0	0	45	24	188	66	601	123	16577	2317	650	362	96	58	25329	3342

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-13. Chum kept by month[1] and creel area in the SG, 2009.

Month	Creel Area																				Est Total	SE Total
	13		14		15		16		17		18		19		20 (SG)		28		29			
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Feb	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Mar	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Apr	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0	0	9	10	0	0	0	0	0	0	9	10
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	24	0	0	0	0	30	24
Sep	67	36	0	0	0	0	0	0	0	0	0	0	0	0	31	32	0	0	0	0	98	49
Oct	-	-	-	-	-	-	-	-	-	-	-	-	0	0	19	14	-	-	-	-	19	14
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	3	4	-	-	-	-	3	4
Dec	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Total	67	36	0	0	0	0	0	0	0	0	0	0	9	10	84	43	0	0	0	0	160	57

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[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-14. Chum released by month[1] and creel area in the SG, 2009.

Month	Creel Area																				Est Total	SE Total
	13		14		15		16		17		18		19		20 (SG)		28		29			
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Feb	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Mar	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Apr	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	0	8	8
Oct	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Dec	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	0	8	8

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[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-15. All salmon[1] kept by month[2] and creel area in the SG, 2009.

Month	Creel Area																				Est Total	SE Total
	13		14		15		16		17		18		19		20 (SG)		28		29			
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	158	51	432	138	-	-	-	-	590	147
Feb	-	-	-	-	-	-	-	-	-	-	-	-	165	48	163	70	-	-	-	-	328	85
Mar	-	-	-	-	-	-	-	-	-	-	-	-	48	19	14	13	-	-	-	-	62	23
Apr	-	-	-	-	-	-	-	-	-	-	-	-	34	11	62	31	-	-	-	-	96	33
May	86	50	556	271	74	30	20	10	3614	1348	54	34	135	60	177	65	134	63	125	98	4975	1385
Jun	932	208	947	331	14	7	18	2	144	67	135	42	380	111	5033	943	61	33	68	52	7732	1032
Jul	4131	549	442	121	44	26	31	10	190	75	57	21	794	186	14101	3040	231	71	70	23	20090	3099
Aug	23203	2667	2141	306	42	15	58	30	43	20	695	168	2568	339	44974	5095	377	114	486	160	74587	5775
Sep	6033	796	488	175	20	10	30	14	25	16	144	53	517	108	11160	1130	245	86	188	82	18848	1403
Oct	-	-	-	-	-	-	-	-	-	-	-	-	203	125	2167	438	-	-	-	-	2370	456
Nov	-	-	-	-	-	-	-	-	-	-	-	-	12	9	615	213	-	-	-	-	627	213
Dec	-	-	-	-	-	-	-	-	-	-	-	-	522	193	1623	416	-	-	-	-	2145	458
Total	34385	2845	4575	568	195	44	156	36	4015	1352	1084	185	5538	485	80520	6148	1047	175	936	213	132451	6957

[1] All salmon does not include Atlantics or Steelhead

[2] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-16. All salmon[1] released by month[2] and creel area in the SG, 2009.

Month	Creel Area																				Est Total	SE Total
	13		14		15		16		17		18		19		20 (SG)		28		29			
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	73	39	105	46	-	-	-	-	178	61
Feb	-	-	-	-	-	-	-	-	-	-	-	-	23	9	22	16	-	-	-	-	46	18
Mar	-	-	-	-	-	-	-	-	-	-	-	-	19	23	3	0	-	-	-	-	22	23
Apr	-	-	-	-	-	-	-	-	-	-	-	-	18	10	16	12	-	-	-	-	33	16
May	172	80	1122	458	27	20	8	3	3771	1507	0	0	6	6	386	189	125	84	168	195	5784	1603
Jun	1549	373	602	243	43	25	12	4	229	102	5	4	72	42	3996	815	81	38	341	245	6930	968
Jul	4383	658	376	98	169	63	142	46	510	165	156	52	306	110	13809	2110	168	69	393	144	20411	2228
Aug	14506	3015	1676	287	82	32	72	34	1532	499	360	92	2272	276	44590	3584	947	384	1695	468	67732	4766
Sep	1862	320	1923	464	41	25	88	40	575	158	966	495	1768	334	37921	3748	381	130	545	136	46071	3845
Oct	-	-	-	-	-	-	-	-	-	-	-	-	758	280	8133	2124	-	-	-	-	8891	2143
Nov	-	-	-	-	-	-	-	-	-	-	-	-	147	105	1126	362	-	-	-	-	1273	377
Dec	-	-	-	-	-	-	-	-	-	-	-	-	312	134	3112	979	-	-	-	-	3425	988
Total	22471	3125	5698	759	363	81	321	70	6616	1607	1488	506	5775	558	113220	6136	1702	421	3142	597	160796	7189

[1] All salmon does not include Atlantics or Steelhead

[2] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-17. Halibut kept by month[1] and creel area in the SG, 2009.

	Creel Area																					
Month	13		14		15		16		17		18		19		20 (SG)		28		29		Est Total	SE Total
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Feb	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Mar	-	-	-	-	-	-	-	-	-	-	-	-	378	133	59	29	-	-	-	-	437	136
Apr	-	-	-	-	-	-	-	-	-	-	-	-	773	199	75	39	-	-	-	-	849	203
May	0	0	52	74	0	0	0	0	0	0	0	0	1788	468	188	124	0	0	0	0	2027	490
Jun	104	54	0	0	0	0	0	0	0	0	0	0	168	83	118	76	0	0	0	0	390	125
Jul	28	26	0	0	0	0	0	0	0	0	0	0	203	60	34	27	0	0	0	0	265	71
Aug	1	0	0	0	0	0	0	0	0	0	29	24	506	168	95	59	0	0	0	0	632	179
Sep	0	0	0	0	0	0	0	0	0	0	0	0	480	130	77	45	0	0	0	0	558	138
Oct	-	-	-	-	-	-	-	-	-	-	-	-	59	31	53	41	-	-	-	-	112	51
Nov	-	-	-	-	-	-	-	-	-	-	-	-	8	6	0	0	-	-	-	-	8	6
Dec	-	-	-	-	-	-	-	-	-	-	-	-	16	11	0	0	-	-	-	-	16	11
Total	133	60	52	74	0	0	0	0	0	0	29	24	4380	577	701	177	0	0	0	0	5295	612

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[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-18. Halibut released by month[1] and creel area in the SG, 2009.

	Creel Area																					
Month	13		14		15		16		17		18		19		20 (SG)		28		29		Est Total	SE Total
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	4	5	0	0	-	-	-	-	4	5
Feb	-	-	-	-	-	-	-	-	-	-	-	-	0	0	16	27	-	-	-	-	16	27
Mar	-	-	-	-	-	-	-	-	-	-	-	-	8	5	0	0	-	-	-	-	8	5
Apr	-	-	-	-	-	-	-	-	-	-	-	-	65	30	0	0	-	-	-	-	65	30
May	0	0	0	0	0	0	0	0	0	0	0	0	301	108	32	27	0	0	0	0	333	112
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73	51	0	0	0	0	73	51
Jul	0	0	0	0	0	0	0	0	0	0	0	0	32	20	34	27	0	0	0	0	66	33
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0	0	0	0	17	18	0	0	0	0	0	0	17	18
Oct	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Dec	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	427	116	155	69	0	0	0	0	582	135

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-19. Lingcod kept by month[1] and creel area in the SG, 2009.

	Creel Area																					
Month	13		14		15		16		17		18		19		20 (SG)		28		29		Est Total	SE Total
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Feb	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Mar	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Apr	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
May	511	111	6	0	18	24	23	15	190	76	115	92	115	81	21	18	4	4	0	0	1003	185
Jun	73	43	96	67	9	4	86	48	187	108	40	21	44	36	118	63	0	0	0	0	653	162
Jul	156	81	101	57	57	27	115	27	60	35	23	11	110	63	154	83	0	0	0	0	776	153
Aug	66	31	106	101	6	7	41	14	275	165	37	25	71	34	237	87	0	0	0	0	839	219
Sep	94	42	0	0	4	3	75	29	122	56	7	8	46	24	137	66	0	0	0	0	485	104
Oct	-	-	-	-	-	-	-	-	-	-	-	-	4	5	10	9	-	-	-	-	14	10
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Dec	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Total	899	153	310	134	94	37	341	66	834	222	222	98	390	116	676	152	4	4	0	0	3770	377

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[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-20. Legal lingcod released by month[1] and creel area in the SG, 2009.

Month	Creel Area																				Est Total	SE Total
	13		14		15		16		17		18		19		20 (SG)		28		29			
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Feb	-	-	-	-	-	-	-	-	-	-	-	-	7	6	22	23	-	-	-	-	29	24
Mar	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	-	-	-	0	0
Apr	-	-	-	-	-	-	-	-	-	-	-	-	31	11	17	12	-	-	-	-	48	17
May	54	35	4	0	0	0	13	0	77	37	0	0	262	247	75	50	0	0	4	0	488	257
Jun	60	52	13	0	14	11	41	22	0	0	45	32	49	40	342	207	0	0	2	0	567	221
Jul	2	0	9	0	1	0	133	34	39	33	84	37	14	10	212	103	0	0	8	0	502	120
Aug	10	0	8	3	0	0	79	28	0	0	11	11	84	92	227	115	5	5	5	0	429	151
Sep	1	0	0	0	0	0	1	0	26	19	24	22	11	12	0	0	0	0	0	0	63	31
Oct	-	-	-	-	-	-	-	-	-	-	-	-	20	15	15	14	-	-	-	-	35	20
Nov	-	-	-	-	-	-	-	-	-	-	-	-	0	0	64	64	-	-	-	-	64	64
Dec	-	-	-	-	-	-	-	-	-	-	-	-	12	11	0	0	-	-	-	-	12	11
Total	128	63	34	3	15	11	267	49	142	53	164	55	490	268	974	272	5	5	19	0	2237	398

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix C-21. Sub-legal lingcod released by month[1] and creel area in the SG, 2009.

	Creel Area																					
Month	13		14		15		16		17		18		19		20 (SG)		28		29		Est Total	SE Total
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE		
Jan	-	-	-	-	-	-	-	-	-	-	-	-	19	18	0	0	-	-	-	-	19	18
Feb	-	-	-	-	-	-	-	-	-	-	-	-	1	1	90	118	-	-	-	-	91	118
Mar	-	-	-	-	-	-	-	-	-	-	-	-	29	19	40	34	-	-	-	-	69	39
Apr	-	-	-	-	-	-	-	-	-	-	-	-	74	29	91	71	-	-	-	-	165	77
May	1474	721	72	55	547	197	186	65	570	252	1595	779	549	271	408	281	0	0	0	0	5401	1178
Jun	1109	447	341	156	100	52	166	108	779	322	254	82	454	166	1675	637	4	5	2	2	4885	884
Jul	657	200	313	104	332	101	616	161	1464	804	264	79	593	154	1145	400	161	77	19	9	5564	964
Aug	151	133	220	71	141	38	638	185	1463	710	118	49	470	122	847	213	12	11	29	31	4089	792
Sep	133	100	22	15	42	19	309	80	286	77	372	190	661	243	523	164	0	0	0	0	2348	381
Oct	-	-	-	-	-	-	-	-	-	-	-	-	461	222	268	242	-	-	-	-	730	328
Nov	-	-	-	-	-	-	-	-	-	-	-	-	11	11	88	68	-	-	-	-	100	69
Dec	-	-	-	-	-	-	-	-	-	-	-	-	67	38	94	111	-	-	-	-	162	117
Total	3524	887	969	208	1161	231	1915	287	4563	1151	2602	811	3390	501	5270	901	178	78	50	32	23622	2005

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[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix D-1. Kept and released catch per unit effort (CPUE) for salmon, lingcod, and halibut by month[3] in the SG creel survey, 2009.

	Kept								Released							
Month	Chinook	Coho	Sockeye	Pink	Chum	Total Salmon[1] Kept	Halibut	Lingcod	Chinook	Coho	Sockeye	Pink	Chum	Total Salmon[1] Rel.[2]	Halibut	Lingcod
Jan	0.61	0.00	0.00	0.00	0.00	0.61	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.18	0.00	0.02
Feb	0.42	0.00	0.00	0.00	0.00	0.42	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.06	0.02	0.15
Mar	0.06	0.00	0.00	0.00	0.00	0.06	0.48	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.01	0.08
Apr	0.04	0.00	0.00	0.00	0.00	0.04	0.41	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.03	0.10
May	0.35	0.00	0.00	0.00	0.00	0.35	0.14	0.07	0.41	0.00	0.00	0.00	0.00	0.41	0.02	0.41
Jun	0.37	0.04	0.00	0.00	0.00	0.41	0.02	0.03	0.25	0.11	0.00	0.01	0.00	0.37	0.00	0.29
Jul	0.28	0.08	0.00	0.45	0.00	0.81	0.01	0.03	0.31	0.30	0.04	0.12	0.00	0.77	0.00	0.24
Aug	0.42	0.10	0.00	1.75	0.00	2.28	0.02	0.03	0.59	0.48	0.04	0.60	0.00	1.70	0.00	0.14
Sep	0.29	0.14	0.00	0.76	0.01	1.19	0.04	0.03	1.07	0.58	0.01	0.16	0.00	1.82	0.00	0.15
Oct	0.80	0.19	0.00	0.03	0.01	1.03	0.05	0.01	2.59	0.02	0.00	0.01	0.00	2.62	0.00	0.33
Nov	0.63	0.00	0.00	0.00	0.00	0.63	0.01	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00	0.16
Dec	1.17	0.00	0.00	0.00	0.00	1.17	0.01	0.00	1.81	0.00	0.00	0.00	0.00	1.81	0.00	0.09
Total	0.37	0.07	0.00	0.69	0.00	1.14	0.05	0.03	0.56	0.30	0.02	0.22	0.00	1.09	0.00	0.22

[1] Total includes species listed in table only.

[2] Rel. = released.

[3] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix D-2. Kept and released catch per unit effort (CPUE) for salmon, lingcod, and halibut by month for logbook reported catch used in the SG estimates, 2009.

	Kept								Released							
Month	Chinook	Coho	Sockeye	Pink	Chum	Total Salmon[1] Kept	Halibut	Lingcod	Chinook	Coho	Sockeye	Pink	Chum	Total Salmon[1] Rel.[2]	Halibut	Lingcod
Jan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar	1.00	0.00	0.00	0.00	0.00	1.00	0.69	0.00	0.23	0.00	0.00	0.00	0.00	0.23	0.23	0.00
Apr	0.59	0.00	0.00	0.00	0.00	0.59	1.38	0.00	0.13	0.00	0.00	0.00	0.00	0.13	0.06	0.47
May	0.50	0.00	0.00	0.00	0.00	0.50	0.52	0.24	0.30	0.00	0.00	0.00	0.00	0.30	0.07	0.87
Jun	0.78	0.00	0.00	0.00	0.00	0.78	0.02	0.12	0.23	0.00	0.00	0.00	0.00	0.23	0.00	0.41
Jul	0.27	0.00	0.00	0.00	0.00	0.27	0.00	0.41	0.14	0.00	0.00	0.00	0.00	0.14	0.00	1.14
Aug	0.58	0.03	0.00	0.00	0.00	0.60	0.01	0.08	0.05	1.19	0.00	0.00	0.00	1.23	0.00	0.22
Sep	0.19	0.00	0.00	0.00	0.00	0.19	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
Oct	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nov	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.56	0.01	0.00	0.00	0.00	0.57	0.17	0.15	0.13	0.49	0.00	0.00	0.00	0.62	0.02	0.48

[1] Total includes species listed in table only.

[2] Rel. = released.

Appendix D-3. Kept and released CPUE for all salmon, all groundfish, and all rockfish by month[1] in the SG creel survey, 2009.

Month	Kept			Released		
	Salmon	Groundfish	Rockfish	Salmon	Groundfish	Rockfish
Jan	0.61	0.00	0.00	0.18	0.07	0.00
Feb	0.42	0.04	0.00	0.06	0.23	0.07
Mar	0.06	0.49	0.00	0.02	1.05	0.20
Apr	0.04	0.48	0.03	0.02	0.59	0.12
May	0.35	0.30	0.12	0.41	0.71	0.41
Jun	0.41	0.18	0.09	0.37	0.45	0.25
Jul	0.81	0.17	0.10	0.82	0.59	0.32
Aug	2.28	0.28	0.08	2.07	0.42	0.17
Sep	1.19	0.26	0.10	2.92	0.36	0.12
Oct	1.03	0.08	0.01	3.86	0.63	0.14
Nov	0.63	0.47	0.02	1.28	0.48	0.05
Dec	1.17	0.10	0.00	1.86	0.56	0.10
Total	1.14	0.24	0.09	1.39	0.50	0.23

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix D-4. Kept and released CPUE for all salmon, all groundfish, and all rockfish by month for logbook reported catch used in the SG estimates, 2009.

Month	Kept			Released		
	Salmon	Groundfish	Rockfish	Salmon	Groundfish	Rockfish
Jan	0.00	0.00	0.00	0.00	0.00	0.00
Feb	0.00	0.00	0.00	0.00	0.00	0.00
Mar	1.00	0.69	0.00	0.23	0.31	0.15
Apr	0.59	1.38	0.00	0.13	1.28	0.00
May	0.50	0.76	0.09	0.30	1.28	0.24
Jun	0.78	0.20	0.13	0.23	1.03	0.34
Jul	0.27	0.83	0.96	0.14	1.37	0.35
Aug	0.60	0.09	0.12	1.23	0.29	0.12
Sep	0.19	0.31	0.38	0.00	0.13	0.25
Oct	0.00	0.00	0.00	0.00	0.00	0.00
Nov	0.00	0.00	0.00	0.00	0.00	0.00
Dec	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.57	0.41	0.26	0.62	0.78	0.21

Appendix D-5. Kept and released CPUE for salmon, lingcod, and halibut by creel area[3] in the SG creel survey, 2009.

Creel Area	Kept								Released							
	Chinook	Coho	Sockeye	Pink	Chum	Total Salmon[1] Kept	Halibut	Lingcod	Chinook	Coho	Sockeye	Pink	Chum	Total Salmon[1] Rel.[2]	Halibut	Lingcod
13	0.44	0.07	0.00	1.26	0.00	1.78	0.01	0.05	0.32	0.42	0.05	0.37	0.00	1.15	0.00	0.19
14	0.31	0.01	0.00	0.13	0.00	0.46	0.01	0.03	0.38	0.14	0.00	0.01	0.00	0.53	0.00	0.10
15	0.10	0.00	0.00	0.00	0.00	0.10	0.00	0.05	0.19	0.00	0.00	0.00	0.00	0.19	0.00	0.62
16	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.13	0.13	0.00	0.00	0.00	0.00	0.13	0.00	0.90
17	0.36	0.00	0.00	0.00	0.00	0.36	0.00	0.07	0.55	0.03	0.00	0.00	0.00	0.59	0.00	0.42
18	0.08	0.00	0.00	0.20	0.00	0.28	0.01	0.06	0.12	0.18	0.00	0.05	0.00	0.35	0.00	0.72
19	0.17	0.01	0.00	0.16	0.00	0.34	0.27	0.02	0.19	0.06	0.00	0.04	0.00	0.28	0.03	0.24
20 (SG)	0.55	0.16	0.00	1.21	0.00	1.92	0.02	0.02	0.98	0.53	0.03	0.40	0.00	1.94	0.00	0.15
28	0.09	0.06	0.00	0.06	0.00	0.21	0.00	0.00	0.13	0.07	0.00	0.13	0.00	0.33	0.00	0.04
29	0.16	0.01	0.00	0.04	0.00	0.21	0.00	0.00	0.59	0.06	0.04	0.02	0.00	0.71	0.00	0.01
Total	0.37	0.07	0.00	0.69	0.00	1.14	0.05	0.03	0.56	0.30	0.02	0.22	0.00	1.09	0.00	0.22

[1] Total includes species listed in table only.

[2] Rel. = released.

[3] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix D-6. Kept and released CPUE for salmon, lingcod, and halibut by creel area for logbook reported catch used in the SG estimates, 2009.

Creel Area	Kept								Released							
	Chinook	Coho	Sockeye	Pink	Chum	Total Salmon[1] Kept	Halibut	Lingcod	Chinook	Coho	Sockeye	Pink	Chum	Total Salmon[1] Rel.[2]	Halibut	Lingcod
13	0.70	0.02	0.00	0.00	0.00	0.73	0.01	0.05	0.06	1.12	0.00	0.00	0.00	1.18	0.00	0.12
14	0.60	0.00	0.00	0.00	0.00	0.60	0.00	0.87	0.07	0.00	0.00	0.00	0.00	0.07	0.00	2.07
15	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
16	0.27	0.00	0.00	0.00	0.00	0.27	0.00	0.38	0.18	0.00	0.00	0.00	0.00	0.18	0.00	0.98
17	1.30	0.00	0.00	0.00	0.00	1.30	0.00	0.20	0.40	0.00	0.00	0.00	0.00	0.40	0.00	0.30
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.59	0.00	0.00	0.00	0.00	0.59	1.34	0.00	0.07	0.00	0.00	0.00	0.00	0.07	0.14	0.50
20 (SG)	1.20	0.00	0.00	0.00	0.00	1.20	0.30	0.00	0.90	0.10	0.00	0.00	0.00	1.00	0.00	0.20
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.30	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.23	0.00	0.44
Total	0.56	0.01	0.00	0.00	0.00	0.57	0.17	0.15	0.13	0.49	0.00	0.00	0.00	0.62	0.02	0.48

[1] Total includes species listed in table only.

[2] Rel. = released.

Appendix D-7. Kept and released CPUE for all salmon, all groundfish, and all rockfish by creel area[1] in the SG creel survey, 2009.

Creel Area	Kept			Released		
	Salmon	Groundfish	Rockfish	Salmon	Groundfish	Rockfish
13	1.78	0.09	0.07	1.16	0.23	0.08
14	0.46	0.08	0.03	0.57	0.34	0.05
15	0.10	0.06	0.09	0.19	0.88	0.34
16	0.05	0.24	0.52	0.13	1.41	0.86
17	0.36	0.47	0.23	0.59	0.84	0.84
18	0.28	0.26	0.11	0.39	1.67	0.62
19	0.34	0.45	0.07	0.36	0.97	0.19
20 (SG)	1.92	0.17	0.06	2.71	0.30	0.17
28	0.21	0.50	0.02	0.33	0.08	0.10
29	0.21	0.28	0.03	0.73	0.07	0.02
Total	1.14	0.24	0.09	1.39	0.50	0.23

[1] In 2009 only creel area 19 and 20(SG) were surveyed throughout the year. All other areas (creel areas 13 to 18, 28 and 29) were surveyed between May and September.

Appendix D-8. Kept and released CPUE for all salmon, all groundfish, and all rockfish by creel area for logbook reported catch used in the SG estimates, 2009.

Creel Area	Kept			Released		
	Salmon	Groundfish	Rockfish	Salmon	Groundfish	Rockfish
13	0.73	0.07	0.06	1.18	0.38	0.08
14	0.60	0.93	0.27	0.07	2.60	1.13
15	1.00	0.13	0.00	0.00	0.25	0.13
16	0.27	0.70	0.87	0.18	1.15	0.44
17	1.30	0.20	0.00	0.40	0.80	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00
19	0.59	1.34	0.00	0.07	1.43	0.00
20 (SG)	1.20	0.30	0.00	1.00	0.20	0.20
28	0.00	0.00	0.00	0.00	0.00	0.00
29	0.30	0.02	0.05	0.23	0.49	0.23
Total	0.57	0.41	0.26	0.62	0.78	0.21

Appendix E. Taxonomic reference of species reported.

*Listed alphabetically by common name.

Atlantic salmon	*Salmo salar*
Black rockfish	*Sebastes melanops*
Cabezon	*Scorpaenichthys marmoratus*
Canary rockfish	*Sebastes pinniger*
China rockfish	*Sebastes nebulosus*
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Copper rockfish	*Sebastes caurinus*
Dogfish (spiny dogfish)	*Squalus acanthias*
English sole	*Parophrys vetulus*
Flatfishes	*Heterosomata, Plueronectiforme spp.*
Flounder	*Bothidae, Paralichthyidae, Pleuronectidae spp.*
Greenling	*Hexagrammos, Oxylebius spp.*
Halibut	*Hippoglossus stenolepis*
Herring (Pacific herring)	*Clupea pallasi*
Lingcod	*Ophiodon elongatus*
Not identified salmonids	*Salmoninae spp.*
Other rockfish	*Sebastes, Sebastolobus spp.*
Other sole	*Soleidae, Achiridae, Cynoglossidae, Pleuronectidae spp.*
Pacific cod	*Gadus macrocephalus*
Pacific sandab	*Citharichthys sordidus*
Pacific tomcod	*Microgadus proximus*
Perches	*Embiotocidae spp.*
Pink salmon	*Oncorhynchus gorbuscha*
Quillback rockfish	*Sebastes maliger*
Ratfish	*Hydrolagus coliei*
Red Irish lord	*Hemilepidotus hemilepidotus*
Redstripe (redbanded) rockfish	*Sebastes babcocki*
Rock sole	*Lepidopsetta bilineata, Lepidopsetta polyxystra*
Sculpins	*Cottoidei spp.*
Skates	*Rajidae spp.*
Sockeye salmon	*Oncorhynchus nerka*
Starry flounder	*Platichthys stellatus*
Tiger rockfish	*Sebastes nigrocinctus*
Vermillion rockfish	*Sebastes miniatus*
Widow rockfish	*Sebastes entomelas*
Yelloweye rockfish	*Sebastes rubberimus*
Yellowtail rockfish	*Sebastes flavidus*

Appendix F. Tidal effort statistics and recreational estimates of chinook and coho kept for the SG, 1960 to 1984.

Year	Effort[1] (boat trips)	Kept Chinook	Kept Coho
1960	189,150	83,000	238,000
1961	199,935	63,000	152,000
1962	205,547	86,000	167,000
1963	247,590	65,000	199,000
1964	198,120	51,000	182,000
1965	250,020	53,000	175,000
1966	259,100	80,000	249,000
1967	254,500	115,000	200,000
1968	265,030	150,000	250,000
1969	281,475	185,000	200,000
1970	306,255	220,000	500,000
1971	341,123	255,000	800,000
1972	300,349	287,000	335,000
1973	293,141	272,000	373,000
1974	443,441	269,000	772,000
1975	334,490	398,000	454,000
1976	340,729	490,000	415,000
1977	363,350	372,000	682,000
1978	369,035	500,000	1,103,000
1979	404,710	350,000	708,735
1980	510,400	204,100	393,500
1981	494,604	197,239	317,091
1982	559,395	124,390	411,686
1983	435,335	139,982	344,664
1984	562,113	315,913	401,628

SOURCE: Hardie et al 2003.

[1] Effort prior to 1980 (the start of the creel survey) may not represent boat trips.

Appendix G. Species and area specific tidal regulations for major finfish in the SG, 2009.

General regulations which affected the 2009 SG recreational fishery for major finfish species are summarized below (these regulations do not include tidal and non-tidal portions of the Fraser River):

- All coho, sockeye, pink and chum must measure 30 cm or more (tip of nose to fork of tail) and the daily limit was four (4), possession eight (8). There were no annual limit on these species.
- The minimum size limit for chinook was 62 cm. Daily limit of chinook was two (2), possession of four (4). In a portion of PFMA 19/20 (Cadboro Bay to Sheringham Pt.), the minimum size limit for chinook was 45 cm.
- The annual limit for chinook coast wide was 30. The annual limit for PFMAs 13 to 19 (north of Cadboro Point) is 15 chinook. The annual limit for PFMAs 19 and 20 (south of Cadboro Point to Sheringham Point) was 20 chinook.
- Conservation measures were implemented again in specific PFMAs to protect certain chinook stocks in 2009 including early timed Fraser River and lower SG.
- Two (2) adipose marked coho per day could be retained from 01 June to 31 December.
- The recreational fishery for Fraser River sockeye in South Coast marine waters was not open to sockeye retention in 2009.
- The recreational rockfish and lingcod fisheries in the SG were operated concurrently and were open from 01 May to 30 September.
- The recreational halibut fishery was open from 01 March to 31 December, with temporal changes to daily and possession limits.

Below is a comprehensive list of the major finfish species and area regulations with exemptions and specifics to the above list. For a complete list of regulations, please see the following website: <http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm?pg=fishery_search&lang=en&ID=recreational> (Accessed Apr 05, 2012).

- Anglers are reminded that there are 164 Rockfish Conservation Areas (RCA's) coast wide and that fin fishing is prohibited in these areas. Maps and descriptions of RCA's are available on the DFO website and at local DFO offices.

- **Lingcod and rockfish:**

  Effective 00:01 hrs April 1, 2009 to 23:59 hrs September 30, 2009, in the following areas, the daily limit for recreationally caught rockfish is one (1) per day in:

- Subareas 19-1 to 19-6 (Victoria area)
- Subareas 20-5 to 20-7 (east of a line from Sheringham Point)

Effective 00:01 May 1, 2009 to 23:59 hours September 30, 2009 Areas 13 to 19 including 29-5 currently open to lingcod and rockfish retention to include Subareas 20-5, 20-6, 20-7. The balance of Area 29 and all of Area 28 remain closed.

Lingcod Retention:

Daily limit of one, minimum size 60 cm;
Yearly retention of ten;
Hook and line fishing including spear-fishing.

- **Halibut:**

The department has completed its initial consultations with the recreational sector and based on comments received, will implement a coastwide opening of the recreational halibut fishery:

> Effective at 00:01 hours March 1, 2009 fishing for halibut will be opened coastwide. The daily limit at the start of the season is one (1) per day with a possession limit of two (2).

DFO has reviewed in-season recreational fishery catch and effort information for halibut and projected catches for the balance of the year. Catch and effort is tracking lower this season and is within the recreational fishery allocation.

DFO has consulted with the BC Sport Fishing Advisory Board (SFAB) on this situation and has reviewed options for the balance of the season. Effective August 22, 2009 the daily limit for halibut coastwide will be increased to two (2) fish per day. The possession limit remains at two (2) fish.

Effective 00:01 hours December 31, 2009 fishing for halibut recreationally is closed coastwide.

- **Coho:**

Coho non retention is in effect in all areas from Jan 01 - May 31. Coho minimum size limit is 30 cm.

June 1 to December 31 - In Areas 13 to 29 you may retain 2 hatchery marked Coho per day unless otherwise specified below:

Subareas 13-20, 13-21, a portion of 13-22 (East Side of Stuart Island and a portion of Bute Inlet):

Effective 00:01 hrs August 15, 2009 until 23:59 hrs September 15, 2009 in Subarea 13-20, 13-21 and that portion of Subarea 13-22 described as those waters in Bute Inlet from the RCA boundary sign at Littleton Point across to the opposite shore at 50 49.9° north latitude and 124 51.63° west longitude, you may retain two (2) Coho per day, one (1) of which may be wild (unmarked).

Portion of subarea 14-11 (Baynes Sound):

Effective 00:01 hrs September 1, 2009 until 23:59 hrs December 31, 2009 in that portion of Subarea 14-11 Baynes Sound inside a line from the Cape Lazo Light, then to the P-54 Bell Buoy on Comox Bar, then to Longbeak Point, then to the mouth of Hart (Washer) Creek, you may retain two (2) Coho per day, one (1) of which may be wild (unmarked).

Subarea 16-5 and portion of subarea 16-6 (Sechelt Inlet and Porpoise Bay):

Effective 00:01 hrs June 1, 2009 until 23:59 hrs December 31, 2009 in Subarea 16-5 and a portion of Subarea 16-6 (Sechelt Inlet and Porpoise Bay), southerly of a line from Nine Mile Point to boundary sign on the opposite shore you may retain four (4) hatchery marked Coho per day.

Portion of subarea 18-8 (Separation Point):

Effective 00:01 hrs November 1, 2009 until 23:59 hrs December 31, 2009 in that portion of Subarea 18-8, inside of a line between Separation Point and Cherry Point, you may retain two (2) Coho per day (hatchery marked or unmarked).

Area 19:

Effective 00:01 hrs October 1, 2009 until 23:59 hrs December 31, 2009 in Area 19, you may retain two (2) Coho per day, one (1) of which may be wild (unmarked).

Subareas 20-5 to 20-7:

Effective 00:01 hrs October 1, 2009 until 23:59 hrs December 31, 2009 in that portion of Subareas 20-1 (seaward of a line between a square white boundary sign at Owen Point, the Port San Juan Light and Whistle Buoy, and San Juan Point and Subareas 20-3 to 20-7, you may retain four (4) Coho per day, one (1) of which may be wild (unmarked).

Subareas 28-1 to 28-7 and 28-9:

Effective immediately until 23:59 hrs December 31, 2009, you may retain two (2) hatchery marked Coho per day.

Subareas 28-11 to 28-14 (Burrard Inlet East):

Effective immediately until 23:59 hrs September 30, 2009, you may retain two (2) hatchery marked Coho per day.

Effective 00:01 hrs October 1, 2009 until 23:59 hrs March 31, 2010, in Subareas 28-11 to 28-14 (Burrard Inlet east of Second Narrows/Iron Workers Memorial Bridge, Indian Arm and Port Moody Arm), YOU MAY NOT RETAIN COHO.

Portion of Subarea 29-3:

Effective immediately until 23:59 hrs December 31, 2009 in that portion of Subarea 29-3 easterly of a line from Gower Point to the Tango light Buoy, then to the northern tip of Lulu Island, you may retain two (2) hatchery marked Coho per day.

- **Chinook:**

Spawning escapements of early timed Fraser River chinook have declined to very low levels and these populations continue to be stocks of concern. Similar to 2008, the Department is implementing measures to reduce harvest impacts in the commercial, recreational and First Nation fisheries. Management actions have been announced for the recreational fishery in portions of Areas 19 and 20:

Effective 00:01 hrs Mon, March 2 and until 23:59 hrs Thurs, May 14, additional recreational fishery restrictions on chinook salmon will be in effect in Subareas 19-1 to 19-4 and Subarea 20-5 (those waters near Victoria between Cadboro Pt. to Sheringham Pt.). During this time period and in this area the daily limit is two (2) chinook salmon per day which may be wild or hatchery marked between the size limit of 45 cm and 67 cm or hatchery marked only chinook over 67 cm in length.

Spawning escapements of Early-Timed Fraser River chinook have declined to very low levels and the Department is continuing to implement additional measures to reduce harvest impacts. Additional management measures are required again in 2009 for commercial, recreational and First Nation fisheries to halt the decline of Early-Timed Fraser River chinook. For the recreational fishery:

Effective 00:01 hrs Wednesday April 1, 2009 and until 23:59 hrs Sunday May 31, 2009 additional recreational fishery restrictions on chinook salmon will be in effect in Subareas 29-6, 29-7, 29-9 and 29-10. During this time period and in this area the daily limit is zero (0) chinook salmon.

The additional management measures to reduce harvest impacts on Early Timed Fraser River chinook stocks currently in effect in Area 29 (Subareas 29-6, 29-7, 29-9 and 29-10) off the mouth of the Fraser River have been removed as planned. Effective 0951 hours June 02 and until 23:59 hrs Thursday December 31, the daily limit is two (2) chinook salmon per day, hatchery or wild, both which must be greater than 62 cm.

The following is a description of conservation measures which are implemented annually to protect Lower Georgia Strait chinook, in particular Cowichan River chinook. Also listed are those areas that have chinook non retention areas to protect local stocks:

Area 13

Effective May 1 to September 30 there is non-retention of chinook salmon in the Sub Area 13-22 commonly known and described as those waters of Bute Inlet lying Northerly inside of a line running from a marker at Alpha Bluff to a marker on the opposite shore to the RCA boundary at the head of Bute Inlet.

Area 14

Effective January 1 to December 31 there is non-retention of chinook salmon in Subareas 14-14 [Comox Harbour].

Effective May 1 to August 31 there is non-retention of chinook salmon in Subarea 14-11. [Baynes Sound inside a line from the Cape Lazo Light, then to the P-54 Bell Buoy on Comox Bar, then to Longbeak Point, then to the mouth of Hart (Washer) Creek].

Effective June 1 to June 30 there is non-retention of chinook salmon in those waters, inside a line from 49 46.74'N and 124 59.06'W near the boat launch at Kitty Coleman Provincial Park, thence north-easterly to 49 47.35'N and 124 57.68'W, thence southerly to 49 45.14'N and 124 54.32'W, thence southwest to the navigation light at the Little River Ferry Dock. Also included in the closure are those waters of Sentry Shoals within a 1.50Nm radius of the Sentry Shoal Marker Buoy.

Effective June 15 to August 15 there is non-retention of chinook salmon in those waters of Lambert channel bounded from a marker off Nile Creek, north along Vancouver shoreline to Mapleguard Point, thence along the Harbour limit boundary to southern point of Chrome Island, then to southern tip of Denman Island, thence north along shore to Whalebone Point, thence to Shingle Spit on Hornby Island, thence along the shore to Norman Point, thence south from Norman Point 2.4Nm to a position (49 28.25'N and 124 36.54'W), and back to Nile Creek marker.

Area 15

Effective January 1 to September 30 there is non-retention of chinook salmon in Subarea 15-6 [Toba Inlet] those waters easterly of a line from Snout Point to a boundary sign on the opposite shore.

Effective June 15 to August 15 there is non-retention of chinook salmon in the those waters of Algerine and Shearwater Passages bounded by a line from the southern most point of Harwood Island southerly to the navigational light on Rebecca Rocks hence northwest to the easterly most point to Vivian Island then northerly to the navigational marker at Mystery Reef hence west to the navigational marker on Atrevida Reef then southerly to the northern most point of Harwood Island then hence along the western shore of Harwood Island back to the point of commencement at the most southerly tip of Harwood Island.

Area 17

Effective August 1 to October 15 there is non-retention of chinook salmon in Subarea 17-4, except for those waters southeasterly of a line from Shingle Point to Pilkey Point and Subareas 17-5 to 17-7, 17-9, 17-13 to 17-17,[Northumberland Channel, Pylades Channel, Stuart Channel], thence a portion of Subarea 17-12 inside a line from Tinson Point to Snake Island Light (RCA Boundary) to the southern Five Finger Island group to the RCA boundary starting Horswell Channel Buoy (49 12.93N, 123 56.03W) to north of Horswell Bluff (49 12.93N, 123 56.47W).

Effective August 1 to October 15 there is non-retention of chinook salmon in Subareas 17-18 to 17-20 and a portion of 17-12 those waters inside a line from Icarus Point on Vancouver Island true north 2 nm, thence northwesterly to the Navy buoy in Ballenas Channel, thence to Nankivell Point at the entrance to Schooner Cove on Vancouver Island.

Area 18

Effective August 1 to October 15 there is non-retention of chinook salmon in Subareas 18-6 to 18-8, 18-10 (Fulford Harbour, Satellite Channel, Shute Passage, Sansum Narrows).

Effective August 1 to October 15 there is non-retention of chinook salmon in Subareas 18-7 and 18-8, that portion of Subarea 18-7 that lies northerly of a line from a square white boundary sign on Vancouver Island, near 48°46.179'N and 123°34.654'W, to a square white boundary sign on Saltspring Island SE of Burial Islet, near 48°45.992'N and 123°33.777'W, and southerly of a line from a square white boundary sign on Saltspring Island approximately 1.5 nautical miles ESE of Musgrave Point, near 48°43.982'N and 123°31.418'W, to a square white boundary sign on Vancouver Island approximately 0.5 nautical miles NW of Cherry Point, near 48°43.197'N and 123°33.708'W.

Area 19

Effective August 1 to October 15 there is non-retention of chinook salmon in Subareas 19-7 to 19-10 (Saanich Inlet).

Area 20

Effective August 1 to October 15 there is non-retention of chinook salmon in Subareas 20-6 and 20-7 [Sooke Inlet, Sooke Harbour and Sooke Basin, northerly of a line from Muir Point to Possession Point].

Opening in subarea 16-5 and portion 16-6

In Subarea 16-5 and a portion of Subarea 16-6 (Sechelt Inlet and Porpoise Bay), southerly of a line from Nine Mile Point to a boundary sign on the opposite shore, you may retain two (2) chinook per day with a minimum size limit of 41 cm, effective 00:01 hours July 1, 2009 until 23:59 hours December 31, 2009.

- **Sockeye:**

There were no recreational directed sockeye fisheries in the SOG survey area in 2009.

- **Pink:**

The number of pink salmon returning to the Squamish system has been low for the past few years. DFO and the local sport fish advisory committee are concerned about these low numbers. As a precautionary measure the daily limit for pink salmon in upper Howe Sound will be reduced to 2 per day.

Effective at 00:01 hours July 27, 2009 until further notice, the daily limit for pink salmon is two per day in Subareas 28-3 to 28-5 and that portion of Subarea 28-2 that lies northerly of a line from Halkett Point on Gambier Island 62° true to a boundary sign north of Alberta Bay.
This action will be re-evaluated in-season when pink salmon begin returning to the area.

Pink salmon opportunities in lower Strait of Georgia - A portion of sub-areas 18-8 and 18-7 (Cowichan Bay and Satellite Channel)

Effective 00:01 hrs August 1, 2009 to 23:59 hrs September 30, 2009, in the following areas, the daily limit for recreationally caught Pink Salmon only is four (4) per day from the Hecate Boat ramp at approximately 48 44.518N 123 37.475W and shoreward of 8 boundary markers located at approximately:

48 44.569N 123 37.376W, 48 44.540N 123 37.019W, 48 44.523N 123 36.684W,
48 44.344N 123 35.869W, 48 44.232N 123 35.387W, 48 43.982N 123 34.798W,
48 43.531N 123 33.961W,
48 43.258W 123 33.599W) (All coordinates in NAD 83).

Angling opportunities for pink salmon in Nanaimo Harbour and Departure Bay- Area 17

Effective 00:01 hours August 14, 2009 until 23:59 hours September 30, 2009, the daily limit for pink salmon is four (4) per day with zero (0) retention for other species of salmon in the following areas:

1) That portion of Nanaimo Harbour shoreward of a line from the end of the most southerly dock located at the Nanaimo Yacht Club (49°10.614'N 123°56.336'W) to the Pedestrian Fishing Pier (Crab Dock) located at Swy-a-lana Lagoon (49 10.264N 123 56.051W).(Note: The area open for Pink Salmon retention reverts to a no fin fishing area from October 1 to October 25).

2) That portion of Departure Bay westerly of a line running from the following coordinates 49°12.600'N 123°57.350'W near the Pacific Biological Station to the light on Brandon Island 49°12.427'N 123°57.571'W to the most westerly BC Ferry dock located at approximately 49°11.672'N 123°57.372'W.